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Beyond Cognitivism

Alternative perspectives on the communication of musical structure through performance

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Beyond Cognitivism
Alternative perspectives on the communication of musical structure through performance

by

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Abstract

This thesis explores the communication of musical structure between performers and listeners; in particular, the prolongational structure of music (as defined by Heinrich Schenker). The concept of *musical performance* is explored at the intersection of the psychological and musicological agendas corresponding to different musical cultures. Accordingly, although this study is focused on the performance of 19th century western classical piano music, it also examines two sub-cultures that utilise this repertoire. The study starts by considering the *objective performance*'s framework, which is epistemologically related to classical cognitive science. However, since the postmodern musicological context claims that music performance goes beyond classical cognitivism, another theoretical and methodological framework is proposed.

First, an empirical study was undertaken that was based on the classic cognitive perspective. It took communication to be a linear, rule-governed circulation of perceptual and/or conceptual contents. The results of the analysis of a series of piano performances and listening tests indicate that, although certain regularities of the prolongational features emerge in both performance and reception, these do not clarify the role of this structure in the performer-listener dyad.

Second, a new perspective on the role of structure in communication during performance is proposed that acknowledges that need for originality and individuality characteristic of current performance practice. It is based on three theoretical pillars: (a) *Transposition,* which characterizes a dialectic relationship between composition and performance; (b) *Intersubjectivity*, which alludes to states of mutuality in which sharing a particular temporal configuration is crucial; (c) *Narrativity*, which is presented as psychogenetically linked to the configuration of time in music performance. An experiment shows (i) how the prolongational structure of a composition can form the material of two different *transpositions* (one cinematographic and one pianistic), and (ii) that listeners comprehend that material by means of *crossmodal capacities*, which are communicated by the particular temporal configuration of the performance.

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Chapter 1: Introduction

> *"May the wise person pardon me if I sometimes speak too much like an artist…may he grant me his indulgence concerning those passages in my work that are too lyrical…and may the artist also pardon me, if, taken by the recklessness of the unconscience, I make too frequent a use of scientific language… I am sorry that in appearing with greater confidence before them and before the public I am missing the wonderful logic of the former and the inexhaustible creative power of the latter. But I have, at least, like them, conviction and good will"*
> Jean d' Udine

In some sense, this is an autobiography. These pages record, in certain way, important fragments from my life. And although I know this is not the right place to reveal myself intimately, I cannot get rid of this reference while intending to offer a coherent whole. The multiplicity of subjects, sources and theoretical frameworks that come together here only seem to receive coherence as they imply a life's journey. So, only in order for the logic of the outlined ideas to become intelligible, I need to refer to my own experience and its course of events whose origin goes back, at least twenty-five years. I promise that readers will see me explicitly only during this introduction, which they will be able to skip if memories bore them. Nevertheless, I hope to be able to explain in this way why despite being neither a musicologist nor a psychologist this thesis settles in the field of confluence of these two disciplines. This brief story will also help me justify needing to historically cover the way in which the relationship between these fields has been conceived around the problems of musical performance, in order to understand that the issues which I will consider here depend on the cultural models on which they have been formulated according to different times and musical subcultures.

My second piano teacher used to enjoy finding and "*making hidden elements sing*" in a piece of music. I was 14 years old when I took my first class with her. I still remember the impact that it caused me. I had been preparing Chopin's Piano Etude in C sharp Minor

Op 25 N° 7. After listening to my performance and giving me a series of suggestions to interpret it, she sat at the piano “to exemplify” what she meant. Almost before the end something appeared that I had never heard before. An extremely clear imitation of the motif on the tonic C# minor triad (or, better said, the end of this motif g#$_3$- c#$_3$- e$_3$ on the left hand, g#$_4$- c#$_4$- e$_4$ on the right hand, that fractures the metric organization of the hemiola (figure 1.1)).

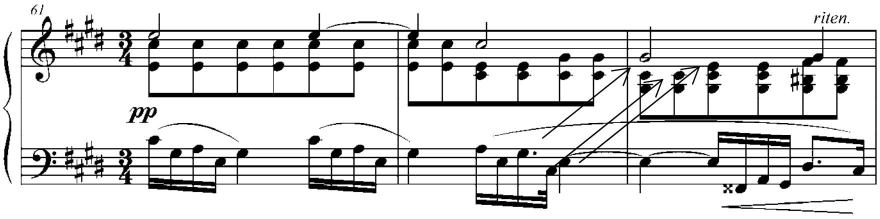

Figure 1.1. *Chopin’s Etude Op. 25 N° 7 in C sharp minor (mm. 61-63)*

For me, that reiteration infused the passage with new expressive meaning. There suddenly appeared before me a point of contact in that dialogue that both voices had been plotting from the beginning of the piece. But, in addition, in that passage, that point of contact materialized the melancholic sense of the complete piece in an almost agonizing expression, offered by a much slower repetition, capturing the mood (and the expressive strategy of that mood) that would prevail until the end of the piece. All in all, though at the time I was not very mindful of the scope of the experience, the motif that had been hidden and was then revealed to me at that moment “*thanks to the art*” of that exquisite pianist who was my teacher, gave me the key of access to an absolutely different understanding of the musical work. That day, I left my piano class convinced that a composition could have a deeper meaning which my preoccupation for pressing each key at the suitable moment did not allow me to see. This was the *secret* that I had to learn to decipher and to perform.

Some years later I had the pleasure of attending a concert of a young pianist who coming from distant Russia impressed the audience of Buenos Aires because of his virtuosity. Certainly, I succumbed to the effects of his pianism, but I was absolutely perplexed in the encores. As an encore, a piece was heard, which although it seemed very familiar to me from the beginning, I was not able to determine what it was. To me it seemed to be Chopin's Etude in C Minor Op. 10 N° 12. But that was impossible: I myself had spent countless hours playing it, I knew it very intimately, but what I was listening to appeared distant, almost unknown. However, there was no other possibility; it could not have been any other composition. It was that etude. I could not understand the *magic* that the pianist was doing, but evidently the piece was his. It was not the same one that I had listened to so many times; it was not the one I used to play. Although I understood that day that performers do not reproduce a finalised work and that what they play are *their* masterpieces, only over twenty years later could I touch upon an explanation to this. This explanation is the one that can be read here in chapter 7, in which I attempt to describe the complex relations that tie the performer to the piece from a postmodern perspective. However, that day I left the concert hall with the conviction that my experience as a listener could sensibly be governed by what the performer did, and that the content of my experience was not the composition itself. On the contrary, that particular performance had been the nucleus of that experience, thus, that experience was unique and unrepeatable. A short time later I had the intuition that that nucleus was not only occupied by that performance, but that something of my own had also been there.

Around that time another strong musical experience shook my emotions. By then I used to play the piano in an ensemble dedicated fundamentally to vocal chamber music from the 18th and 19th Centuries. One evening I was meeting with the soprano and the baritone of the group with the intention of choosing a song repertoire to study. We dedicated a good deal of time to sight reading duets by Schubert, Mendelssohn, Brahms. Thus, *going through pieces*, the time arrived for the duet *Ich denke dein* Op. 78 N° 3 by

Schumann after Goethe's poem. None of us had even heard the piece, the reason why we were in truth sight reading. More than twenty years have passed since that episode, and I still have found neither the words nor the means to relate what happened to us. I can barely now assure that we were submerged in a state of mutuality according to what I attempt to explain in chapter 8. But at that moment I could only think that at very few times in my life had I felt so near to somebody, that the current communicating us had become incredibly intense, that that communication had nothing to do with what was possible to be said in words, and that there was no such thing as *my emotion* but rather *our emotion*. I remember the words that my friend, the baritone, was able to articulate when we finished performing the piece, filling a silence that the tears in the eyes of my other friend and a strong knot in my own throat prevented us from populating: "O*n occasions like these, I am grateful for being a musician and having the opportunity of doing music*". The quotation evokes neither a memorable thought nor an enlightening insight. Nevertheless, it reveals that our experience was woven around something outside of us and that, while serving to amalgamate to us in that state of mutuality, offered us a space to create it. Please, may it be understood, I am not saying that we had entered into a mystical critical moment gazing at the presence of Schumann, nor anything of the sort. I am simply saying that we were conscious of the fact that that joint action was what had bound us in the depths of that communication, and that such action was exerted on the composition represented on the score that we were reading for the first time in our lives. I had often performed with other people but I then realized that in that *joint action* one gambled much more that *playing at the same time*, *imitating expressions* and the rest of the propositions that until then defined for me musical performance as a communal experience.

Only now can I bring together those experiences and give them a sense. However, this thesis obeys the old yearning of explaining them, and the plain intuition of there being a link between them. The three experiences hinge around the problem of meaning in music. But the most interesting detail is that the three experiences locate meaning in the context of performance. Contemporary musicology is based on the assumption that musical analysis is able to offer a profitable approach to the problem of meaning in music. Nevertheless, there are some scholars who think that traditional musical analysis can provide the key to access only a partial aspect of musical meaning (Micznik 2001). Probably, as will be seen in chapter 7, an important part of what is left outside of traditional musical analysis is what is representative of the act of performance. Nevertheless, the first inkling I found in the direction of explaining my experiences was, indeed, this musicological optimism. The formidable development both in music theory as an academic discipline and music analysis as a technical resource came to my knowledge at a time when my attempts to achieve a performative creation as a musician were exhausting the route I had undertaken. Around that time I believed myself to be journeying through a process that could be understood as a kind of *revelation*, to which I felt that with effort, I was acceding. The effort was mainly placed in technical training, and observing in detail all the models I then had (my teacher, other teachers, the musicians I could listen to in live performances and others that I could analyse through recordings). It was necessary to add to the proximity to my teachers a receptive capacity (one's *own talent*) to allow me to go from *apprentice* to *sorcerer*.

But, as I have said, that route was being exhausted because, firstly, my contact with the most contemporary approaches to general education and, particularly, to music education took to me to consider learning in more systematic terms. Secondly, because performative problems that I was considering were already much more sophisticated: fundamentally I was troubled with the problem of obtaining a coherent performance, with both a sense of unity, avoiding performative contradictions, and a sense of graceful continuity, in such a way of envisaging the musical piece as an artistic whole.

Musical analysis seemed to offer a perspective of the musical work susceptible to be systematized in the necessary terms for its learning. But, in addition, it seemed to be a key to penetrate the intricacies of musical interpretation and a solid scaffold to construct a coherent and *unobjectionable* performance.

Almost at the same time I came into contact with music psychology, which also raised my optimism in discerning the problems of musical communication. And that, in addition, this optimism was established in a more and more intimate alliance with that objectivist musicology. Thus, music theory and analysis offered the basis for performance and, at the same time, provided the premises to understand the way in which that performance *touches* the listener. The performer's intention in action and the listener's understanding in listening are taken as two faces of a same coin, tailored from the arguments of a musical theory, developed in order to clarify compositions as they come to us in writing. Unity and coherence could emerge from a conscientious analytical investigation and then, could be communicated to the listener in performance.

Against this background it is not difficult to understand why I was excited to know about the prolongational theories of tonal music. Although in chapter 3 I will develop the concept of prolongation in a more extensive manner, now I can say that if the musical piece can be understood as transformations of a solid and fundamental basic structure, then coherence is genetically guaranteed. From that it follows that unity in performance is possible if the performance manages to capture the nature of those transformations and to communicate them to the listener successfully.

As can be seen, until that point nothing referred me to the experiences previously narrated. Only the notion of prolongational structure, particularly as proposed by Heinrich Schenker (whose salient aspects will be seen in chapter 3), appealed somewhat to my intuition, instilled by my piano teacher, that a deep and concealed facet of music exists and can be made to surface. Now, the theory offered me a frame that extended the possibilities of finding and *unearthing* such treasures and also linked this topic to that of coherence and unity within the musical form. As Nicholas Cook affirmed, "*Schenker' s own analyses assume that music has form because the part acquires its aesthetic meaning from its relation with the whole, and the main sphere in which this happens is that of directed tonal motion*" (1987a, p.64)

Nevertheless, the problem was both theoretically and practically much more complex than it seemed: prolongational theories of music, specially that of Heinrich Schenker, are strongly questioned as far as their cognitive reality status goes (Cook 1987b, 1990, Martínez 1999). That is to say, there seems to be certain consensus around the fact that, although prolongational theories are explanatory of important aspects of the composition, they do not capture its experiential aspects. Despite this, it seemed sensible to think that if (i) the notion of prolongational structure could help me, as a pianist, to form my performance in a particular way, and that if (ii) as my old experience in the concert of the Russian pianist had demonstrated, the performer can take part in a decisive way in the listener's understanding of the work, then this *underlying* musical structure might, to some extent, *touch* the listener. As simple as that...!

As complex as that; as dark as that! The very notion of an underlying prolongational structure is quite dark, but how it can configure a performance, how it can *make contact with* the listener, and other considerations in this line are, however, much more complicated issues. I was absorbed in these sinuous thoughts when the moment for proposing my thesis arrived. If the prolongation notion could be so useful to think about performance, but, at the same time, so questioned as far as its cognitive reality status, could this mean that the very concept of cognitive reality was being seen from a very *classical* perspective as one tied to perception without considering its implications in the realm of action? I then found it necessary to think of the prolongational structure in the course of performance.

Thus, the original idea of this work came into sight: *Is prolongation an attribute of performance?* And, in this way, my preoccupation with the problems of musical interpretation and its communication took me to the crossroads between psychology and musicology.

This thesis settles in the heart of that crossroads, but from the perspective of my interest in music performance. In this way, psychology, music theory and analysis and musical performance constitute the three-dimensional framework of this work. Nevertheless, as the central subject is communication, there are inescapable references to semiotic, philosophical, and aesthetic theoretical frames, and as will be justified further ahead, to both evolutionary and developmental theories. I trust that I am able to guide the reader towards the relationship between all of them. In order to make easier this task, the next section outlines the entire structural organization of the thesis.

1.1 The organization of this work

Initially, two chapters develop general issues. Chapter 2 presents a historical approach of the relation between psychology and musicology, which almost naturally emerges in explaining music performance. This is not only a simple temporal contextualization of the main topic of this thesis from a historical perspective. The historical perspective is merely outlined as an excuse to introduce the epistemological problems that will be important subjects treated here. The aim of the chapter is, therefore, to explore the epistemological crisis through which the subject under discussion journeys.

Thus, one will see (analysed from a historical point of view, but reaching beyond mere chronological report) intersections of paradigms, affinities and divergences, and agreements that these two fields of knowledge have drawn up on the problem of "playing music", always under a clearly defined context proposed by western academic music culture. This is not then, a heuristic illustration of the topic, which can be dispensable in its understanding, but, on the contrary, it tries to exhibit key aspects for comprehending the approaches discussed during the rest of this thesis. In that sense, the historical map course coalesces at the present time, in which the displayed perspectives are synchronously present. In another sense, this historical route constitutes a way, which tries to be elegant, of showing the tensions that coexist in the present scene. As I have just said, these superimposed approaches obey different epistemological perspectives around the topic of music performance, also being strongly tied to the dominant ideologies in each cultural context. My own musical formation took place in a socio-cultural context in which the political violence (identifiable in countries turned into active secondary arenas of the Cold War), resulted in a bloody dictatorship. Many of the musical conventions that marked my education, in interpretative terms, come from ideas associated to the ideologies that sustained that dictatorship. The notion of authority based on the unquestionable tradition of a canon, the absolute absence of intellectual reflection about musical problems understood in communicational and creative terms, are some of these points. In short, I propose viewing in historical terms the components of a present scene in such a way that allows us to find music-theoretical, psychological, communicational, and performative terms on which to investigate communication in performance.

Chapter 3 presents, in a brief form, the aspects of the prolongational theory that will be useful to me in attempting to understand its possible intervention in performance and its communication. The necessity of this chapter arises from the fact that the prolongational theories, in particular Heinrich Schenker's, have been widely disseminated in English-speaking musicology, introduced by his followers in the UK and USA, who have proposed an interpretation of it strongly befitting the dominant epistemology since the post-war period. Then, the chapter reviews different epistemological perspectives from which the notion of *prolongation* has been considered as one of the theory's main constructs. Also, a critique of cognitive perspectives is glimpsed at for having colonized Schenkerian thought attributing interests and perspectives to it typical of the intellectual context found in neo-Schenkerianism. Nevertheless, the chapter includes the treatment of psychological components that are relevant to the problem we are considering here, and the derivations of performative concern that music theory has found. This chapter is linked to Appendix I, in which the main theoretical views of prolongation are briefly summarized for the uninitiated reader in this topic.

The rest of the chapters fully open the discussion of the three-dimensional theoretical frame, and these are different since this frame has been transformed, changing its approach to the topic, and therefore its utility for treating it. Chapters 4 to 6 approach the question of whether prolongation can be understood as an attribute of performance, and in that case whether it can be communicated to the listener from the perspective of the dominant paradigms that have contributed with a body of research to the comprehension of communicational aspects of expressive musical performance. Concretely, these chapters are centred on the meeting point between a musicology installed as science in academic realms and a psychology colonized by the so called Cognitive Revolution. In that context, chapter 4 presents a brief synthesis (which, without a doubt because of its brevity, is not absolutely fair to many excellent contributions that may have been disguised or omitted) of such approaches with the intention of contextualizing both epistemologically and methodologically the empirical evidence that will be shown, analysed and discussed in the following chapters. This chapter gives the reader an idea about the prospect that has oriented my search from my first contacts with music psychology and in which, undoubtedly, it is possible to obtain many answers to an important portion of the questions here raised. Appendix II, which is linked to this chapter, presents some empirical psychoacoustic and psychological foundation related to this paradigm approached from the listener's perspective. The following two chapters are sustained by the framework presented in this chapter.

Chapter 5 shows the first empirical study of this thesis. In particular, it intends to give a systematic study of performance as its focus of analysis related to the structural interpretations of the composition emanating from opposed approaches of musical analyses. All the examination included in that chapter departs from the premise that attributes of performance are susceptible to be understood as mapping attributes of the musical analysis (in so far as structuralist musicology understands the attributes of musical analysis as *the* musical structure). The reader will easily notice that the entire suggested perspective rests on the objectivist approach to music performance. In that sense, descriptions of the performances are understood as *sets of actions* of the performers. That is to say, it is a musicological analysis with a clear psychological purpose, in which the focus of study is rather the performers and their *intentions*. The analysis of similarities and differences between a set of important performances of a piano composition from the 19th Century constitutes the nucleus of the study[1], which identifies two performances that can be considered opposed in terms of their allegiance to an interpretation of the composition, as either showing its prolongational structure or highlighting exclusive attributes of the musical surface[2].

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[1] A preliminary analysis of these commonalities was presented at the 2002 National Meeting of Research in Arts and Design, University of La Plata, Argentina.

The empirical treatment of the subject is completed by a series of listening tests that are presented in chapter 6. The first experiments were designed under experimental premises that attempted to investigate the problem whilst maintaining the conditions of performance and listening in a setting as similar as possible to its *natural ones.* In this, the experimental tasks involved listening to complete works as they were recorded by the original performers[3]. In contrast, the last experiments depart from the artificial manipulation of the musical stimuli, giving rise to the use of experimental paradigms which were developed and validated in compatible studies[4]. The results obtained in these experiments, as well as in the descriptions of chapter 5, uncovered some questions that the classical perspective, both in the psychological and in the musicological, seem not to be able to respond to entirely. Appendix III provides some additional interpretation of these data according to a theoretical framework derived from Pragmatics.

In order to explore some alternative responses, chapters 7-10 present a broad multidisciplinary scope, starting from a reflexive proposal which relocates a perspective from which to examine music performance, up to the analysis of both psychological paradigms and musicological approaches, giving rise to this relocation, and that results in a more extensive explanation of communication between performers and listeners based on the new terms. For that reason, three brief chapters (7 – 9) cover those points. Although reading imposes a linear order of appearance of the ideas, it is necessary to consider that these three chapters will be understood exactly when each of them is thought of as based on the others. I am not asking for the reader, in a display of Cortazarian acrobatics, to alter the reading order or to read the chapters in different sequences. I am simply requesting patience until finishing the reading of the complete thesis in order to exactly understand the scope of each one of the chapters and its incumbency regarding the central subject of this thesis. This new perspective begins with a shorter chapter, the 7th, in which a series of reflections about performative practice are considered[5]. This is the chapter in which my profile as a performer can be seen more clearly. There, a reflexive performer writes, questioning himself about his artistic task. There I propose a way to understand music performance in which composition is considered as the material for elaboration of the piece of art, instead of a completed work of art in itself. In this way, Appendix IV shows the literary journey that inspired this idea. Basically, this proposal rests on two theoretical pillars taken from other compatible fields: the notion of *transposition* (taken from the semiotics of mass media) and the concept of *dialectic of the materials* (taken from the dialectic materialism applied to the examination of music, in particular after the philosophy of Theodor W. Adorno). In combination, both ideas draw up a battle area of performance that rescues it from its confinement to a reproductive and merely interpretative function to open a clear creative function. But in addition, music composition, understood as the material of the performance, guarantees the historical-social-cultural contextualization of the performative act. In this way, one will see that it is possible to glimpse some aspects of the cultural origin of the current music performance of academic music from the *common practice* period.

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[2] A brief analysis of both performances was previously presented at the *First Annual Meeting of the Argentinean Society for the Cognitive Sciences of Music*, Buenos Aires, 2001

[3] Parts of these experiments were presented at the 2001 Conference of the Society for Music Perception and Cognition. Queens University, Kingston, Ontario, and at the 2001 National Meeting of Research in Arts and Design, University of La Plata, Argentina

[4] A brief part of these data was presented at the 2003 National Meeting of Research in Arts and Design, University of La Plata, Argentina

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[5] A preliminary stage of these reflections was presented at the Second International Symposium on Psychology and Aesthetics, Miraflores de la Sierra, Madrid, 2006.

For its part, Chapter 8 is located clearly in a psychological field. In it some critics from developmental psychology and primatology fire at each other against the backdrop of communication seen as information transmission. This perspective, which understands communication as a linear process that unidirectionally ties sender, message and receiver, presents serious difficulties at the time of understanding the reciprocal influences of the involved actors, the communicated contents and the cultural contexts in which the communication takes place. On the contrary, a different perspective, based on a dance metaphor, that has been developing strongly in recent years, mainly from the above mentioned disciplines, seems to better capture the components involved in musical communication. The chapter synthesizes the key concept of *intersubjectivity* as the operative platform on which communication is carried out. At the same time different approaches are discussed that developmental psychology has worked up for the concept of intersubjectivity, with the intention of understanding which is best adapted to understanding musical communication. In that sense, the utility of speaking about either states of mutuality or communion instead of communication will be considered in order to explore the processes that accompany both the first *intersubjective exchanges* in life and other intersubjective experiences throughout the vital cycle (such as that provoked around the sight-reading of Schumann’s *Ich denke dein*), which conserve intact many of the earlier features. This chapter also has an epistemological interest: I try to face the problem from a genetic point of view, since I consider that genetic psychology can account for many of the problems in general psychology. However, against this background it is also necessary to consider that the particularities of the expression in music do not constitute a universal phenomenon, because they are tied to the changing idiosyncrasies of the history and context of each musical culture that, by definition, are unique. Therefore, and agreeing with Blanco and Castro (2005) any correct psychological explanation should aspire to being ontogenetic, phylogenetic and culture-genetic at the same time. After reading chapters 7 to 10 one after the other, the reader will see that the proposed diversity in them aims to clarify this triple genesis.

In chapter 9, we come again to locate ourselves in a musicological field. Nevertheless, soon after starting, it will be seen that the chapter looks for a new bridge between psychology and musicology, already in the context of postmodern artistic realization. The chapter approaches the matter of narrativity of music. At first, the theme may be considered as a digression off the route I had been following. Nonetheless, as it will be seen, the subject of narrativity is taken in order to understand how the composition can serve as material for creation of the performance as independent artwork. I start off by considering that the narrative impulse is a part of the psychogenetic conditions for developing the imaginative activity that on the one hand characterizes the construction of performance, conceived as independent artwork, and, on the other hand, organizes the listener's reception of it. In this way communication between performer and listener, understood as intersubjective experience unfolds itself *narratively*. In particular, it will be seen that this view allows for the fact that what performer and listener share is a way both to organize and to experience time in music. A clear epistemological perspective will emerge throughout this chapter. This consists basically of understanding music as performance (Cook, 2003) emphasizing its autonomy from composition as an artistic form. This is the reason for which many of the musical examples that illustrate or explain concepts developed throughout this thesis, from the first chapters onwards, are presented through recordings of performances instead of through the usual way in which musicological publications used to include their exemplifications, that is, by means of scores. As will be seen, a score is a representational form that captures some attributes of the composition but that does not account for the performance. Therefore the score will be used when alluding to the composition. On the other hand, recordings, or other representational forms (such as graphical profiles of dynamics and timing) will be used when we are talking about performative issues. In this sense, the meta-language that musicology has developed related to performance as an independent form of art still is in a very precarious stage of such a development. Therefore, the communication of certain ideas relative to performance itself making use of propositional categories may darken rather than enlighten. In those cases (particularly in chapter 2) I will dispense with all meta-linguistic attempts.

In chapter 10 I attempt to carry the ideas which were presented and developed in the previous chapters to an empirical terrain. The chapter begins with an example of transposition from a musical composition towards two different significant domains: on the one hand towards a musical performance and on the other hand towards a film. The idea is firstly to show how knowing the structural aspects of the composition, particularly those which talk about the prolongational structure and the underlying voice leading, can give rise to an imaginative activity that leads into the fulfilment of the transposed work (both with the music performance and the film). In short, the issue consists of seeing how the composition fires the imaginative endeavour that gives rise to the final artistic product, taking into account the existence of other materials while modelling the definitive work of art (Appendix V describes some more artistic materials used in the film along with the piece of music). But in addition, the way in which the prolongational structure can be considered as the basis for a time configuration of the transposed artwork will be investigated. Thus, I will attempt to show that the two different significant supports (music performance and film) can share characteristics of their temporal configurations. In other words, they can be *temporally* compatible, giving rise to a sort of *crossmodal similarity*. Crossmodality is a concept that is introduced in chapter 8 as one of the most important characteristics of intersubjective experiences. In that way, when suggesting that crossmodality is a phenomenon also present in the reception of music performance, I am lending credence to the hypothesis that performance can be understood as an intersubjective experience according to which speaking about communion, in the sense of *mutuality*, is more convenient than referring to communication in terms of information transfer. The chapter also displays the results of an experiment in which the hypothesis of crossmodal understanding is submitted using the classic experimental paradigm of similarity judgments.[6]

Finally, in chapter 11 there are some thoughts that I formulate as conclusions from a final analysis of the entire travelled path. These reflections are oriented, again from my personal perspective, to the radical change of perspective that I have been developing that has lead me from an initial undertaking involving a clearly explanatory intention about the problem of communication in performance towards an interpretative approach of it. In other terms the chapter will try to give an account of why all the road travelled has driven me in the direction of an interpretation of that earlier intuition related to the fact that, in some point, the three anecdotes that I spoke of above were tied around the knot of the preoccupations that as a performer I had always: how is it that the listener and me as performer, can in the course of performance understand each other so well!

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[6] An earlier version of the analysis of these data was presented at the Five Annual Meeting of the Argentinean Society for Cogntive Sciences of Music, Corrientes, Argentina, 2006.

Chapter 2: The relation between psychology and musicology in the course of music performance

2.1 Introduction

Assuming music as a knowledge domain entails thinking about it not only as an object that is elaborated and used in a particular way by a given culture. It also implies demarcating a field that is identifiable by the particular way in which human beings get to know it. In other terms, we understand a portion of the reality that opens in front of us at a given moment and context as a knowledge domain because we unfold a particular mode of creating meaning from it. Regarding the arts, it is not just any portion of reality, but a specific part of it that has been developed by the culture itself in order to be communicated among its members, and possessing a series of attributes that are denominated in a generic way as *aesthetic* (DEA 2003). Music can be defined as a cultural production *aesthetically communicable.* The discussion about what is *aesthetic* exceeds the scope of this work. On the contrary, we will approach here the problem of *communicability*.

The question of communicability equally interests musicology as it does psychology. Performance studies have been an interesting arena in which musicology and psychology have aired many common problems. In the recent formulation of this field, a series of postulates have been set down as starting points (Dunsby 1995, Rink 1995): (i) music performance as cultural production has a structure, therefore it can be understood, in structuralist terms, as an *object*; (ii) that structure is susceptible to be described in terms of component attributes, (iii) communicability consists of the circulation of those component attributes between members of the culture, (iv) in western culture, its members carry out different roles in that circulation, (v) roughly speaking, musicology contributes to this field through the study, description and analysis of *communicable structural attributes* (that is to say, point ii) whereas psychology undertakes the study of how that knowledge circulates (point iii) and the description of the intervening subjects (point iv).

This will be the start point of this thesis. This approach comprehends music as an object in the classic communicational scheme involving a sender, a message and a receiver (Shannon and Weaver 1949). Inevitably, from this conception it is necessary to discuss the sender's intentionality of communication, and the receiver's recognition of this intentionality. In addition it requires defining the space the *performer* as subject occupies in relation to the place of the sender. Thus, the performer has frequently been seen as intermediary in a linear communicational chain - following the metaphor of *information transmission* - between the composer's intentions, and the listener's reception (Canazza and Rodá 1999, Hargreaves *et al.* 2005).

However, we will see that the role of performer is variable according to different motivations and the very notions of music and music performance that have reigned at the diverse times and cultures, those that also depend on the dominant ideologies (Gembris and Davison 2002) that reciprocally operate on both the musicological and psychological agendas of every period.

It is not possible to understand musical communication if the variable relations between musicology and psychology are not contextualised in relation to the mentioned dominant ideologies. This will be shown throughout this chapter. For this, different points of view will be discussed from which music performance has been considered in different historical times, showing, in addition, the variable tensions between music theory and performance. Taking the archetype of performer that it is possible to identify from the passage of Enlightenment to Romanticism, in early 19th century, the aim is to locate the possible lines of attack to the problem of communicability of musical structure that will be treated in order in this thesis. Thus a brief analysis of the psychology-musicology relation around (i) the romantic performer, (ii) the modern performer and (iii) the postmodern performer as clearly identifiable archetypes (although not so clearly easy to situate chronologically) will be undertaken. Also, a review of the solutions for the problems derived from this relation with respect to the two first archetypes will be carried out. This discussion will allow approaching the first stage of the experimental endeavour of this thesis. The discussion on possible solutions of the tensions around the postmodern archetype will be left until chapter 7, after which different psychological and musicological approaches will be treated, necessary to understand the second empirical undertaking.

2.2 The supportive – expressive function dichotomy

Technical assistance usually is a condition for artistic realizations. In many cases a highly diversified technical support is needed. That diversified support frequently lies on several people different from *the* artist. However, the hallmark of the individuals involved in each instance of an artistic process seems to deepen itself regarding performing arts. When such an individual manages to leave on the work an original and creative mark that is associable to him or her as an individual, his or her role no longer is supportive but is fundamentally expressive and creative.

This opposition seems to refer to the old *technique-expression* dichotomy. Nevertheless, this is not exactly the subject: the supportive role - the expressive role antinomy is built on the subject’s motivation.

On the one hand, the subject’s motivation is to serve another’s will. It is a *Supportive Function.* The supportive function pushed to an extreme is represented by the entire cancellation of subjectivity. It implies meticulously accepting certain imposed canon. The merit of the work is strongly related both to the handling of procedures and techniques, and to the stable and repeatable qualities of such procedures. The value of the product depends on the precision in applying the technical procedure and thus on how faithfully the work reflects that canon.

On the other hand, the motivation may consist of following one's own impulse, obeying one's own personal creative and expressive will. It is the *Expressive Function.* The extreme of this function is represented by the purest manifestations of subjectivity and individuality (which, often, lose communicational strength). It implies creating one's own, new and original canons, unknowing of all external voices and only acting under the dictates of one's own will. Performance is viewed as a sort of exteriorisation of the self. In this case we are used to judging both the characteristics of individuality and the way in which the person *is seen* projected in the production. The value is estimated in terms of originality and creativity which turn the product into something *special*.

The supportive function of the performer is a strong thought that modernity has maintained (Taruskin 1995), being held by some 20th Century composers (Schönberg, Stravinsky, Hindemith). In Schönberg's opinion, for example, the performer is a sort of necessary evil for the incapacity that the standard listener has of directly receiving from the composer his or her message (by a written score) (Newlin quoted by Cook 2003). Without being so explicit, many other composers hold a similar idea about the role of the performer through a highly detailed, almost obsessive way of writing music. This yearning is seen brought to life in electronic music. Nevertheless, it is interesting to notice the performing role that disk-jockeys have acquired in present self-denominated *electronic pop music* in the light of the creative nature of performance. Although the allegory of the *necessary evil* is remarkably extreme, the supportive function of the performer is one of the most important aspects of any model of music performance (Godlovitch 1998).

Perhaps, the *expressive function* is more familiar in music performance, although its extreme manifestation does not exist in this field. However many of its characteristics appear in diverse performative tendencies. For example, some pedagogical approaches that are contiguous with the self-help and *new age* psychology, propose the primacy of the performer's self as the supreme value in the performance (Ristad 1982). Again, this kind of allegory of *being oneself* is also extreme, but, nevertheless, self-expression occupies a place legitimised by many projects relative to music performance (Kivy 1995).

It is possible to affirm that the history of western music performance is the history of the tensions between these two functions. The performer's exact incumbencies, the performer's expected stamp on the artwork, the extent to which the performer's task characterizes and mirrors the very artwork, arise from those tensions in every particular music culture. But, in each cultural context, the performer's incumbencies are dialectically defined, respecting the ontology of the musical work (Cook 1999, 2003, Johnson 1999). The examples 1 to 4 of the disk show pairs of performances that are considered the same work in 4 different musical cultures (Example 1; example 2; example 3; example 4). Probably, the musical culture of the example 1 cannot consider the pair 4 as the same work. However, for the musical culture of example 4, the differences in the pair are part of the performer's stamp, but they do not affect the identity of the piece. What we are attempting to demonstrate by using these examples is the fact that the "musical work conception" of a particular epoch, a musical culture, is the result not only of its structural musical notions that define the style, but also of the set of beliefs around the role of music in that culture, the way in which their members are involved, and the levels of participation that the different cultural actors have in the realization of the artwork.

Throughout these four pairs of examples it is possible to note different motivation on the part of the performer. In a same musical culture, whereas the motivation goes more and more towards being that of expressing one's own ideas and senses, the characteristics that allow determining the identity of the new performance with the first, get blurred. What the personal motivation of the performer is questioning as the four examples pass is *where* does the musical work lie. The example 5 in the disk gives an account of this.

In the mid-nineties, an Argentinean rock star, Charlie García, recorded a *rock* version of the National Anthem. Although many recorded versions of the National Anthem already existed, soon the idea of two Anthems began to circulate: a *National Anthem* and *Charlie's Anthem.* Why they were not considered as the same work?

Initially we are tempted to answer: "Charlie's Anthem is not faithful to the original score". However, in 2000, other popular musicians, Jairo and Lito Vitale, performed and recorded the National Anthem. They neither were *faithful* to the score but they were broadly accepted. However the denomination "Jairo's Anthem" was never used.

What was called into question in this episode is precisely the depth of *the performer's stamp*, and the fact that opened out into controversy was that this *stamp* depended on the context and the dominant ideology in that context. García did what he always used to do in his own musical (sub)culture. Nevertheless, the context was another one there.

The tension between supportive and expressive functions has emerged throughout different times and contexts, and with diverse names. Although not strictly superimposed, but at least to a similar extent, it is in the arena of the present debate. For example, Thompson (2001) mentions the dichotomy between the "authenticist correction" and the "aesthetic correction", referring to the functional duality that we are presenting but limiting the arena of the present debate specifically around ancient music. On the other hand, in the context of performance in the 19th century, Ferris (2003, p.354) proposes a dichotomy between *composer's music* and *performer's music*. According to this author these categories do not represent watertight compartments but are rather two poles that describe the aesthetic intentions that are beyond the piece and the expectations that the audiences bring to the performance of the pieces. Further away from this, Ferris mentions the partition suggested by Carl Dahlhaus between "virtuosity" - talking about the practice in which the performer adapts himself to the demand of the performance circumstance, in particular the demand of the audience - and "interpretation" - talking about the way of performance in which the performer obeys rather to the demand of fidelity to the composer, and to the *original* spirit of the piece. On the other hand, Lawrence Kramer (mentioned by Ferris) prefers to speak about "twin styles": the first one oriented to the priorities of the performer and the second one oriented to the realization of the work accurate to the composer's spirit. More comprehensively, according to Goehr (1992), this double sense of the performative activity dates back to classical concepts of *mimesis* and *catharsis*. The idea accounts for the relation of the performer both with the imposed restrictions *from outside*, and with the raised necessities *from inside,* relative to the originality, personal expression, and individual pleasure.

During the rest of this chapter these ties will be examined in three different contexts throughout the history of western art music (WAM). Many of the prevailing ideas at those moments also subsist in certain current contexts. Some of them are intimately related to the perspective that dominates the agendas of research in music performance in the field of psychology of music. Others encourage certain changes of psychological approaches and accompany the transformations operated in the musicological perspectives in the light of the cultural approaches to the discipline (Clayton, Herbert and Middleton 2003).

2.3 The romantic performance

2.3.1 The myth of genius

Music performance in the 19th century is characterized by the presence of multiple dualities. For resolving all of them, the romantic culture reconfigured the figure of the *genius.* The notion of genius was used in the enlightenment period as synonymous to capacity, but throughout romanticism the concept was adopting its connotations of special ability, inventive intelligence, more insightful perception, and superiority with which we know it (Jaffe 1980).

According to Eco (1992) its origin is very remote in western thinking: the hermetic thought of 2nd century, characterized by "*the mystical intuition, the non rational illumination, and an instantaneous and non discursive vision. No longer is it necessary to speak, to discuss and to reason. It is enough with hoping that somebody speaks to us.*" (p. 36) Remarkably, this characterization resounds in many writings about musical performance:

> *"From the more and more intimate understanding of art's deep mystery, that inner tremor will be born, perhaps, at some sacred time of his studies that will give the feeling of proximity of artistic truth."* (Cortot 1934, p. 15)

The interpretative genius is not any genius. Genius consists of being transparent to let the work be seen and simultaneously be vividly present for the audience in lieu of the composer (Hunter 2005). It is not a question of subordination of the self to the composer's desires. It is his or her own genius that makes it possible for him or her to enter the composer's spirit. The performer is a *medium*. Thus, the supportive function and the expressive function may be seen as strongly integrated in such a figure.

The psychology of the second half of the 19th century turned towards a more scientific approach. Nevertheless, it had reserved a place for the ineffable. Genius occupied that site, and, at that time, psychology did not worry to investigate its nature more deeply. Thus, geniuses were often seen as strongly introspective subjects, worried about the course of their own reflections regardless of the collective consequences that these thoughts could carry, and knowing themselves to be exceptional beings. Geniuses were subjects ready to undergo the lack of understanding of a mediocre world that could not understand their genius. (Castro *et al.* 2005)

2.3.2 Genius and the resolution of the dualities

Early in the 19th century the partition of performer as independent from composer led to the first important duality. This process takes place in the context of capitalist transformation of compositional production. Therefore the entire musical production was adapted to the newborn "musical market". These changes gave rise to a strong development of the *concert* as institution. In this, performers also had to sell *their products.* On the other hand it gave rise to the establishment of *repertoires*, implying that a more and more important geographic and temporal rupture existed between performers, who produced the concerts, and composers, who generated the pieces for them. Composers gradually began being considered *naturally* as absent in the concert. Their presences were replaced by the performers' attendance.

Separation between the composer's figure and the performer's person conveyed a great demand (particularly in technical terms) towards the latter. In this way, the growing development of instrumental technique begins to uplift the artist to a special category of being. Virtuosity little by little began to be the genius characteristic that was going to differentiate the performer from the rest of the mortals. Thus, the supportive function impelled the development of the artistic pretentiousness of the performer. A great paradox is then, whereas the division between the technical and expressive components of the musical execution was attended (Macdonald 2002), that development of the supportive function leads to the imposition of the expressive function.

This technical development gave to music performance the component of *physicality* that it required in order to be considered as an artistic labour. The concept of Fine Art (coming from the 17th century) assumed the creation of an artistic *object*. Highly sophisticated instrumental technique offered music performance a physical quality to be fused with a high spirituality, thereby allowing geniuses to access to their own artistic status.

2.3.3 An *enactive* structure – performance relation

Virtuossi acquired their status of genius by virtue of their superlative technical development. Virtuosity enormously excited audiences, and this was the one that finally granted the genius status to performers. In this way, although performers used to declare to be at the service of the composer, they were, in fact, inclined before the audience. Composers are a sort of mystical endorsement that is only present through performers. In this apparent supportive attitude, the performer’s stamp is always guaranteed because of the fact that only the genius has access to the true revelation of the artwork. In this context the expressive function emerges from the supportive function. Only the *virtuosso* can reach the reproduction of the composer’s spiritual height (Hegel 1818).

Romantic performers developed their technique as a way to commit themselves as a supportive resource. But, this served as a platform to project their artistry. The romantic artist understands the composing genius through technical development. While being owner of an amazing technique, the performer had access to the work's truth (Macdonald 2002).

In this way, it is possible to appreciate that performance itself was being considered as a field in which many of the dichotomies raised within the frame of music aesthetics of the early 19th century were dialectically resolved: composer vs. performer; technique vs. expression; technique's materiality vs. expression's ineffability; etc. (Hunter 2005). The so strongly rooted idea of the performer's *loyalty* to the composer, which until today governs most of the principles of music performance, arose from there. Shortly, the myth of the performative genius arose from an abstract notion of loyalty: the performer would be a better artist *serving* better the composer. Paradoxically, *loyalty* is a consequence of the expressive function. In general, the notion of loyalty arises when the hierarchies of power are threatened. When the subordinate can do something by their own motivation, by themselves (and possibly for themselves) the concept of *loyalty* starts to be considered and the idea of *treason* concomitantly arises.

How did virtuosity become the key of artistic status? Musicians of the first half of the 19th century understood the supportive and expressive functions as an indivisible whole. The endeavour of playing difficult passages, developing virtuosity, which implies the application of a rigid discipline in contact with the musical piece, led inexorably to the creative expression of the performer in order to achieve the revelation of the artwork. Performers fulfil the presentation of the piece as it was conceived if they initially contemplate it, then capture its spirit and finally "content (themselves) with rendering it with all the facility of which (they are) capable" (Fétis and Moscheles, quoted by Hunter 2005, p. 358). Technical facility is the passport to the knowledge of the composing genius. The performers belonging to the first romantic generation looked for a means in technical ease to stimulate fantasy (Macdonald 2002). It is the way in which a relation between the artist-performer and the musical text, and between interpreters and their *mission*, is established (Eco 1992). And the myth of genius leaves room for everything to occur in a way that cannot be explained.

Both intuition and revelation guide understanding; the understanding of the world. According to the German theoreticians in the early 19th century (Hegel, Baillot, Hummel) the apprehension of the content of a piece is a question of sudden inspiration (Hunter 2005). But that inspiration did not arrive any old way, but through action, through meticulous and coordinated movement of all the actions necessary to activate the composition's sound, to put the composition in sound. In this way, something remains inexplicable in the romantic perspective of music performance: *"Interpreting an artwork (…) is neither taught nor reached by any pedagogical system."* (Riemann 1916, p.103-104) This was the place that nineteenth-century psychology was allowed to leave without explanation. And this is what is often criticized of this romantic legacy: its (apparent) *arbitrariness*.

2.3.4 The romantic performance institutionalised

In spite of the apparent subordination of performers to the composer and their authentic relationship with the audiences, the place of genius always was a genuine space of power. In that way, performance could not be subordinate to arbitrary vicissitudes. In order both to consolidate the performing genius's power and to avoid an anarchist abuse, romantic performance created mechanisms of perpetuation by means of the development of *schools*. The performance schools arose mainly as devices for the transmission of the technical-mechanical knowledge involved in music performance. Nevertheless, the notion of school as performative tradition soon extended to the entire realm of the activity. The schools were constructed around mythical figures who guaranteed good judgment to the performance, while they maintained the role of the genius as a unique guide and leader. The didactic work of the *school* was materialized by the music editions, which used to include a great amount of performance indication in the scores. Within the school's pedagogical logic these indications not only had the purpose of *nearing* any disciple to genius, but they also established genius's hierarchical level. Genius is always over the rest of the mortals and the disciples knew they could not reach his or her height: "*Chopin, like every original talent, is not able to be imitated, however it is necessary to try to enter into the spirit of his composition in order not to do the opposite*" (Zimmerman quoted by Bellman 2000, p. 152).

According to Richard Taruskin (1995), performative traditions have the value of being socio-cultural constructions that give meaning to the musical experience. Nevertheless, these academic traditions separate from the very sense of socio-cultural construction. They are generally the dictation of one person that determines what is possible (or better, what is not possible) to do. *Didactic* works, produced in that way, are nothing other than compendia of instructions to play a piece well. They also tend, like all creeds, to create unconditional believers with a progressive loss of individuality and self esteem. The result of this is a strong dependency that performers establish with those who are *illuminated.* In the eagerness of not needing that truth, the *unilluminated* are forced to do what some musicologists have referred to as *consulting the oracle* (Taruskin 1995). In spite of all the changes produced both in the conceptions about musical performance and in the power relations that the conception of *the myth of genius* provokes, in particular in the pedagogical realm, this point of view continues to be effective in so many aspects of musical production as well as in instrumental education, musical marketing, both in pop music and western art music, and including *folk music psychology.*

2.4 In search of objectivity

The reaction to the hyperbolic development of romantic ideas in the realm of music composition that could be clearly appreciated during the inter-war period became distinguishable in the scope of performance from the post-war period. Previously, composers - in particular Ravel, Stravinsky, Hindemith – had begun to make the emphatic request of performers: Do not interpret! Performers began to be seen more as executors than as interpreters (Stravinsky 1970). Therefore, the problem of their role definition became a problem more of ethics than of aesthetics.

Particularly in the English-speaking countries, strengthening of the musical studies in universities came together with the new imposition of a music performance aesthetics that started to obey that composers' demand. The "*musical sciences*" development, mainly music theory and historical musicology, opened a supply of important knowledge to the performer. In that context, such knowledge was stated as a vital source for artistic decision-making. The perspective of genius did not satisfy an intellectual environment that explored knowledge from a psychology based on empirical evidence.

2.4.1 A new psychological subject and a new epistemological object

Musical science could not accept a concept of genius supported by the supernatural. This notion was replaced by the one of expertise or talent (Sloboda and Howe 1991, Sloboda and Davidson 1996, Davidson 2002, Welch 2001), according to which capacities considered as different actually display quantitative differences - throughout its phases of development – rather than qualitative ones (Sloboda 1991). Amongst their many attributes, the talented subjects have a great curiosity for sources and theories. In that way, hermetic explanations do not conform to those who are talented. In parallel, for a psychology which is already totally rooted in empiricist bases, the account including a *mysterious force* can no longer take place in its agenda. On the contrary, a search of an account of expertise abandoning the previous explanations involving the *gift* and the *ineffable* began together with the development of learning theories. More objective means might be used for understanding and promoting excellence. In this context, the methods of experimental psychology were going to be the means and music theory and historical musicology were going to be the force of its epistemological base. The idea is that performers *do not interpret* yet, but they *objectively* offer the musical artwork.

However, the concept of objectivity was taken immediately as a very difficult idea to be applied in artistic fields. Inevitably, including this concept in music performance agendas brought conflicts in milieux still closely related to the previous paradigm. Another term that takes part of the romantic lexicon and which would be used by performers, listeners and critics is *loyalty*. Loyalty to the composer, versus the subjugation of the *virtuosso*. Meanwhile, the specialized critic began to speak of *authenticity*.

As Peter Kivy (1995) has stated, notion of *authenticity* is taken as being synonymous with *validity* (an expression of strong scientific connotation). A performance is considered *authentic* when it attains the supreme objective of serving the truth of the composer's idea. From there, the idea of authenticity favoured the supportive function extending it to aspects that until this moment had been patrimony of the expressive function (tempo, phrasing, dynamic, rubato, etc.). The *artistic correction* idea was strongly intensified. Besides, *correction* requires a *canon*. Authenticity is based on *authority* (Kivy 1995). This authority is always the composer's authority. But at that moment, the middle of the 20th century, that authority did not speak through genius, but through science: historical musicology and musical theory.

2.4.2 A *determinist* structure-performance relation

In the heat of objectivism at least two clear trends in music performance arose: *The practice of historical performance*, and *the practice of analysis-based performance*. In both cases, the search for objectivity leads to such an exacerbation of the supportive function that it practically results in the concealment of the performer's identity. Both approaches aim at the composer *speaking* through performance, and differences between them concern the means used for this goal.

The historicist perspective emphasises loyalty to the composer when recreating all the external conditions of the original performance. This implies an attitude of scrupulous double-faced fidelity: the replication of the practice of performance within the composer's lifetime and the replication of the very sound of the performances within the composer's lifetime. This perspective has a strong philological foundation since it is based on the analysis of texts. Not only scores, but also whatever sort of writings that allow their interpretation, in deciphering the signs printed on the score. But other documentations are also very important. In particular the musical instruments of the original time are a kind of *archaeological* key. From this perspective the expressive function is reduced to the interstices that current historical musicological knowledge leaves free between the text and the sonorous result (Kivy 1995). From the psychological point of view, this approach gives rise to a two-way thought: the scientificist, oriented towards generalizations, and the expressive, oriented toward particularizations. Thus, in their scientificist attitude, performers gather the particular situation and *resolve* it in a generalized way. On the contrary, in their expressive attitude, performers particularise a given musical trait as a unique and unrepeatable characteristic. This two-way directionality of thought was vastly problematic for performers and the scientificist attitude was accounting for all the realms of performance. Under these conditions, individuality in performance is little less than an epiphenomenon, it is not a primary concern. Actions that performers must make in every moment of the performance are determined by musicological research, which give rise to a sort of historicist musicological canon.

Under this approach, the performer’s creative behaviour consists of behaving as a composer (Kivy 1995). Here, questions of performers’ *historicist composition* (concerning the resolution of continuo bass, ornaments and cadenzas) play a very important part. But notice that this is rescuing the old idea that the composer is *the creator* because he *creates* the text; this is a very widespread idea both in classical music theories and in contemporary cognitively oriented ones (Williams 1950, Willems 1954-1964, Meyer 1973, Lerdahl and Jackendoff 1983).

The approach based on musical analysis, is, in principle, sceptical regarding the historicist perspective by virtue of its chimerical aspects (Stein 1954, Taruskin 1995). The objectivity in performance that the analytical approach aims at comes from the intrinsic analysis of the musical piece as it is explicit in the score (Cone 1968). Performance is clearly a function of the musical structure. The mission also consists of filling the gap between score and sound output, but through the explanations that arise from the very score and not from external conditions to it (Stein 1954).

This perspective is also distrustful of (romantic) traditions of performance. Concerning this, mimesis and intuition generate liberties that often give place to erroneous conceptions (Stein 1954, Berry 1989). Again, as a part of the musical-studies academic field, music performance is seen as one more science. In this way a *correct expression* of the musical content is guaranteed by a meticulous mapping of the musical structure (Berry 1989). Each interpretative decision is consequence of a defined analytical insight. Performance is seen as a critical speech that is the product of the rational examination of all and each one of the musical work's structural aspects as they are expressed in the score (Berry 1989, Cone 1995).

2.4.3 Music performance and the positivist appeal

The *analysis-based approach*, a perspective that integrates the details of the analysis in the set of the musical form, would guarantee a coherent performance in which the parts are at the disposal of the whole. Coherence is one of the supreme values of performance. It is a sort of operating form of the widely sought after values of truth and objectivity. And performative coherence is defined by analytical coherence.

Richard Taruskin (1995) understands the struggle between romantic performance and this objectivist performance in terms of the *vitalist - geometric* opposition. The vitalist performance "*is an objectification of our own pleasure in activity, and our own vitality.*" (T. E. Hulme, quoted by Taruskin 1995, p.108) According to this, the vitalist performance mainly rescues the dynamic qualities of music showed in fluctuations of tempo and sonority. On the contrary, the *geometric* performance reflects a desire to obtain a strong frame inside which to feel secure. The geometric execution is founded on decisions based on deductive or inferential demonstrations of *coherence* conditions that maintain the togetherness of its attributes. The performance problems are created as aims of research whose hypotheses are verified by applying logical principles and/or contributing *empirical evidence*. And therefore, aesthetics is considered as a logical problem: musically (artistically), what is possible to be accepted is possible to be demonstrated. Performance is taken as a manifestation of the state of knowledge relative to certain performative problems, often expressible in mathematical terms. The parsimony of the mathematical model is a guarantee of coherence (Cone 1968, Epstein 1995). It is not difficult to notice the relation between this way of seeing music performance and a psychological agenda whose criterion of validity is the mathematical expression of its findings.

There are two other important characteristics that link objectivist performance (geometric) with classical cognitive science. Firstly, we have the idea that the performer's actions can be understood as obeying hierarchical systems, in which the relation between the parts and the whole is hierarchical. That is, in which certain actions control others.

Secondly, according to the objectivist viewpoint, performance can be understood in grammatical terms as a set of rules that tie each aspect of the musical structure, the musical score, the traditions, or the external conditions of performance, to determined actions and expressive decisions. The individuality of the performer is developed in the eventual emptiness that the grammar leaves. At the same time, the impact that the actions of the performance also exert on the listener can be understood according to rules; for example, rules of the type *if/then*, which guarantee the performer's mission of becoming something (structurally) audible (Levy 2001). Audibility becomes the goal that legitimises the action in relation to what is analysed. Thus, rules not only regulate the performer's choices, but also serve the critical attitude as a judgmental element: if performance fulfils the rule, then the performance is better. This locks up a key concept of the analysis-based approach, namely, that the performance's value finds foundations outside the performance itself, mainly in analytical models (often developed for other aims) and in the operations that the performer makes in relation to those models. Consequently, authors from this perspective talk about intra-musical relations, referring to all the others as extra-musical relations (Levy 2001, p.52).

By all means, this is compatible with a psychology that is more concerned about generalizing, finding common behavioural patterns with the intention of describing an *average performer* (paralleling the notion of average speaker), and determining the conditions of acceptability of a given performance, rather than in distinguishing and analysing performances and performers as individualities that affect the musical work.

Succinctly, the objectivist programme defines a performance of a musical work as being materialised in *the* norm (score, grammar, etc.). In this approach, music theory is also at the service of a hierarchical conception of music, which establishes with performance a strongly determinist relationship. This music theory gives account of a musical structure that is characterized by the hierarchical organization of the events present on the musical surface. This hierarchy is organized according to rules that allow tying every detail of that surface to the whole. The *Generative Theory of Tonal Music* by Fred Lerdahl and Ray Jackendoff (1983) is the most conspicuous example of this coalescence of music theory with the classical cognitive science program. Nevertheless, other musical theories also serve these aims (Cooper and Meyer 1960; Meyer 1973, Berry 1987; Lerdahl 2001).

In spite of its criticisms of romanticism, the modern programme shares two important characteristics with this. One is its philological identification that orients both perspectives around the notion of *musical text.* The second – linked to the previous one – is "*the Romantic enthronement of the autocratic and infallible composer-creator, divorced from real time music making*" (Taruskin 1995, p.167). At the same time, neither of the two traditions recognizes the role played within it by the performance's oral tradition and the adaptation of this tradition - the dynamics of transformation of the tradition - to the current conditions in which the performance takes place (see the case of Arnold Schönberg as performer in Jackson 2005).

The objectivist perspective is the one that has generated, by its affinity with classical cognitive science, the epistemological support for the immense mass of investigation that nowadays exists about communication in music performance. In particular, the very notion of *communication of structural attributes in music performance* is one that obeys this epistemology. Therefore, all the first experimental endeavour of this thesis is based on it, and, in a certain sense, proceeds from the principles reviewed here. Thus, the experiments developed in chapter 5 will follow the logic outlined in these pages and the paradigms and methods developed in greater detail in chapter 4.

In spite of the strong influence of these ideas, current musicology increasingly questions many aspects of this perspective of music performance. In the rest of this chapter we will briefly review the main criticisms the objectivist performance has received from current musicology, with the intention of making clear at the start of this thesis, that, in spite of comprising a hegemonic paradigm, the studies in performance seen from the classic cognitive perspective are not the only way to approach the topic of communication in performance. From chapter 7 we will venture towards some theoretical routes of development which tend to give answers to these criticisms from in the context of the postmodern musical performance: and some collected experimental evidence from alternative paradigms will be presented.

2.5 Targeting objectivism

The development of electronic means of reproducing music could have turned the objectivist program into a sort of arena of academic discussion. Roughly, each new version of a given musical piece implies *an advance in knowledge* about this piece. The paradox of this electronic revolution is that, far from demolishing the figure of the performer, it returned it to the pinnacle of glory. Certainly this could be *academic glory,* reached thanks to the contributions made by advances in *scientific* knowledge in the field. Nevertheless, both artists and audiences seem to be more preoccupied by the performance's individuality and idiosyncrasy than by any kind of objectivist precision. The re-editions of very old versions and a sort of postmodern upsurge of individuality place us face to face with the possibility of enjoying an enormous variety of interpretative styles and diversity seems to be the present hunger. If this is the case, in what way was the objectivist programme mistaken?

2.5.1 Objection to the individuality of performance

The objectivist programme has not solved what, according to Kerman (quoted by Dunsby 1995, p. 47) is the key problem of music performance: the way in which the musician's individuality must exert influences on the artwork's individuality (Bowen 1999).

We have seen that objectivism sees music performance as a declarative activity. What performers must display is their knowledge about the musical structure (Berry 1989). Performance is not only a declarative mode of conveying the knowledge the texts provide, but performance itself, at one extreme, is seen as a didactic text: the text that allows the listener to understand the composition.

Objectivism also recognizes that performers can have other things to say, beyond the *explanation* of the composition. They may want to declare their feelings, for example. But these feelings will only be able to be expressed if they do not contradict the feelings of the work (Kivy 1995). The essence of objectivism is this: an objective reality exists that is the musical work. That reality is *outside* the subject that performs. The work consists of taking control of that reality and communicating it as it occurs. The objectivity of this task is guaranteed to the extent that the communicative guidelines are controlled by rules that the performer obeys. In this way, the creative activity is minimal. It is accepted that performers are *creative intermediaries* when they behave like a composer, adding something to the composition that it did not have in writing, and that is susceptible to be set in writing. Briefly, performers can be creative so long as they act not as performers but as composers (arrangers).

But the ontological boundary between *composition, arrangement and performance* is very porous and it strongly depends on the musical culture to which the phenomenon belongs. Therefore, this corset that constrains performers' creativity by pressure of the objectivist approach, far from solving their problems concerning intervention, aggravates them remarkably. The text's limit is already vague enough. The musical texts *lock themselves up* according to the specific practices that determine the meaning of the signs (Kivy 1995).

The objective guidelines that colonize the entire action of the performer tend to guarantee not only a system of values by which to judge the performance, but also a frame for understanding its communicational particularities. Only when understanding performance as objective data, is it possible to consider it as *the object* of the *sender - message - receiver* communicational chain. The objective viewpoint declines to admit some aspects as part of the performer's role that does not fit with its rule-systems, because it would not know how to explain its communication (which is basically what happens with some aspects of imagery and metaphoric thinking). When seeing communication from another perspective (as we will approach in chapter 8) we will be able to free ourselves of this problem, and to understand performance as a freer phenomenon including aspects that not necessarily require a propositional format. Rather than *the truth* of a performance, *the contingency* of it will be the heart of interest. We will see in chapter 8 that from this perspective certain performative resources such as repetition, which are very problematic for objectivism (as was indicated by Kivy) are vital in communication (Stern, 1985; Imberty 2001, 2002).

2.5.2 Performance Depersonalisation

As a result of its hostility to performance individuality, the objectivist perspective does not fully acknowledge the role of the intuitive and the ineffable in performance. It confuses the ineffable with what is *magical* and associates it with the romantic perspective of the myth of genius (Berry 1989). Negating the intuitive as a performance's strongly personal and human trait (Lester 1995) reveals some aspects of a very authoritarian conception, which objectivism has reserved for performative problems. The objectivist perspective denies intuition in performance because it is substantially denying its artistry.

In addition, the objectivist perspective must depersonalise performance in order to guarantee objectivity, favouring the authority principle over the identification assumption, which accentuates subjectivity. This a priori authority principle accentuates the authoritarianism that objective performance already revealed elsewhere: (i) it is ideologically authoritarian, because it is ethnocentric; (ii) according to Taruskin (1995), objective performance represents a fundamentalist vision of the performance's concerns sanctioning the idea that "what is not allowed is prohibited" (see Stravinsky 1971); (iii) this perspective becomes conservative, understanding the performer as a *curator* rather than a *creator*.

Objectivist performance becomes an instrument of power. Objectivism asserts that there is an only way in which music should be listened to, there is an only truth held on the composer's authority. If performers do not adjust to that truth they are misguided: for this reason, for Lester (1995), objectivist performance is alienating. But in addition the disloyal performers are subversive because they lead the listener somewhere that is not the truth.

The composer's truth is *transferred* to the performers, then they have the truth and therefore who shows an ostensible power before those who are *underneath* in this hierarchy, namely the listeners. The recognition that the materialization of music arises from the composer-performer-listener relation (Narmour, mentioned by Dunsby 1995, p.51) which is vertical and linearly univocal, therefore the listener is the last link in the chain, without any kind of influence on the other actors. The ostentation of this power makes the performer a pretentious subject (Rothstein 1995). But this power is nearly the result of an obsequious attitude; is the result of their *loyalty* to the composer. The term loyalty appears in literature on music performance, almost as much as it appears in the fascist or nationalistic manifestos.

Objectivism has a pejorative point of view of the listener. It considers that the listener has a passive attitude, and therefore does not contribute to the musical meaning. For example, objectivism tends to deprive the listener of ambiguity (Agawu 1994), which is a conspicuous attribute of music (and art in general) (Tanner 2000, Levy 1995). Objectivism's systems of rules have tended to reduce ambiguity. From the cognitivist perspective, fuzzy systems and systems of rules of preference (see chapter 4) are attempts to approach the problem of ambiguity within classical cognitive science. But this is always made with the aim, more or less explicit, either of eliminating it, or, at least, of reducing it to a minimal expression. Objectivism in performance reflects this perspective.

Exercising intuition, and artistically using ambiguity are some of the aspects of freedom that both the performer and listener have, in relation to the music composition. When denying these aspects, the objectivist performance incarcerates the performance and its listening behind the bars of the musicological canon. But, paradoxically, contemporary audiences vindicate their rights to listen freely. Performance should not then be understood as something outside a strong commitment with that freedom, but as a part of a performer's commitment with her social and intellectual obligations that emerge from the performance's circumstances (Hunter 2006)

2.5.3 Music as text

Both the historicist performance and the analysis-based performance appear rather as text than as act (Taruskin 1995), establishing relation and action hierarchies that are not necessarily related to the core of the performative problems. They represent ways of considering performance as an artefact instead of an activity (Small 1998). The negation of performative aspects is practically a condition that the objectivist perspective imposes. Briefly, there is no possibility to be *objective* if we consider the performative variables. This comes from a much stronger ideological foundation according to which the ideas are propositions, and therefore everything that does not have a propositional format cannot be considered an idea. Therefore performances have not traditionally been treated like statements in themselves, but like *renditions* of statements (Lester 1995)

One of performance's own characteristics that the text is not able to capture is the issue of real time. According to Janet Schmalfeldt (1985) when the musician plays, his or her synoptic understanding must be completely put at the service of projecting the piece as a whole. In this situation, his or her thought is conditioned and restricted by time. Linked to this question, the performer also has to face a very high demand of completeness. In other terms, the performer should play *all* the notes. Unlike the analyst, who may select passages in order to clarify his or her demonstration, the performer must "manage" the whole. Finally, another aspect of performance itself that is absent in most of the theoretical approaches is the cognitive and biomechanical demand for the movement, the force and the stamina involved in performance that gives rise to performative decision-making (Dunsby

1989, Lester 1995). Such actions can acquire the status of signs in the context of real time performance, contributing to the performance's meaning (Clarke 1995).

The real time construction favours a conception of music performance more related to the other performing arts. One of the alternatives to the objectivism proposed is to consider music performance as dramatic action (Schmalfeldt 1985, Rothsthein, 1995). This approach to the musical work returns to it ipso facto the particular temporal experience that provokes the performative act. In an interesting way, Schmalfeldt rescued metaphorical aspects of the analytical language for shaping the character of performance. The musical structure is considered as a sort of stage on which the dramatic elements, which are going to happen during the development of the performance, are arranged.

In this context, the analysis of the musical work has a more heuristic than normative value. It revalues the sense of privacy and empathy, and the understanding of the work that the performer obtains through the long hours of practice on the piece (Lester 1995). Correspondingly, for Schmalfeldt, (1985), analysis and performance are cooperative tasks, but they cannot overlap because the psychological substrate of each of them is totally different. The analyst has a verbal substratum, while the performer has a final commitment with time and the contingent.

Following the Schmalfeldt idea, we will propose that this side of music performance is badly interpreted by the objectivist approach because it does not consider an important psychological component. It is not considering the way in which time determines a modality of artistic thought. The arranger models a time configuration that does not impose constrains on the real time of his or her labour. This is the essence of the *projectual thought*, representative of the visual arts, but that, as we see, takes part at certain key moments in the process of temporal arts. On the contrary, the performer models a time configuration that *does* impose constraints on the real time of his or her labour. If the performer decides to realize an *accelerando,* this decision directly affects the time configurations of his or her artistic production. In other terms, the time of the work is the time of its realization. This is the *performative thought.* For this reason we cannot confuse the performer with the arranger. The latter's strategy of thought is a projectual one, whereas the one of the former is performative. Surely there is much projectual thought in the performer's task. But finally it is *performative thought* the one that governs the decisions, and therefore the artwork in itself.

Interestingly, when rescuing the temporal aspects of performance, a strong identification of music performance with theatrical performance clearly arises. This will be the key point of our proposal. But we say that the music performance's quality viewed in this way will not be linked to the issue of value as it arises from the objectivist approach, but to the issue of verisimilitude, that is a theatrical one. This is compatible with the Rothstein's (1995, p. 238) assertion about identifying in musical analysis an "analytical truth" and a "dramatic truth", describing the way in which performance emerges from the dialectic between both. Similarly, Nicholas Cook (2003) proposes seeing the musical text as *script.* This perspective gives back to the former its primary character of *indication for action*, removing its condition of artistic object in itself. This argument will be further examined in chapter 7.

2.5.4 Decontextualization of performance

The objectivist perspective ignores the role of the listener as well as of the performance's conditions and the audience in the artwork (Thompson 2001). The examination of these aspects is replaced by historicist or structural generalizations. This shows a naive approach to the contexts, tending to homogenize all contexts and preventing the recognition of the contextual diversity in history and in the present moment. Thompson (2001) indicates that, in general, musicology ignores the audience because it considers it as a neutral element in the musical act. In opposition, he proposes the necessity of considering the time and the space of the listener. In that view, the musical works are seen as independent organizations that work in any context, unrelated to the type of event and ideology particular to those contexts.

According to Small (1999), the objectivist perspective can only give rise to a model of unidirectional communication (sender - message - receiving) in which, as we have already seen (p. 45), the listener is the last link of the chain and as such has a passive role without participating in the musical meaning. On the contrary, a perspective that contemplates the context will allow appreciating that the meaning is shaped through the human relations that are provoked during the performative act. Therefore to think about other performative relations and other ways to understand music performance also implies questioning classical cognitive science's agenda, because subjects' responses are towards the performance itself and not towards an isolated abstraction called "a piece".

Nevertheless, the relations between the text and the context are problematic. The text participates in the context configuration (Monson 1996, mentioned by Cook 2003) and represents only one part of the meaning. The construction of the social context as one of its central functions is present in the musical structure. For that reason, to consider performance from an ethnographic perspective (Cook 2003) would allow putting the piece in the wider context of performance that offers one a clearer vision of the contribution of all the elements of such a context in the construction of meaning.

In spite of all the criticisms the objectivist approach has received, musicologists do not manage to characterize performance because of this diversity. There is a key point in this problem to which we will have to find an answer if we are interested in pursuing the relation between musicology and psychology in the course of music performance, in the postmodern scene. It is the way in which the composition is considered in the present performance. Where is the musical work in a scene in which the relation between the performer and the audience seems to fill all the available space? Is the musical work no longer a question to be considered? Have we gone from the composer's tyranny to the performer's and audience's tyranny, which cancel the composition? Chapter 7 will try to address some of these problems from the set of criticisms that we finished reviewing here. Before this, as we were saying, we present an empirical investigation undertaken with the objective of approaching an answer to our central question, from the perspective of both the psychological and musicological dominant paradigms. This excursion will allow us to appreciate whatever might still be possible by advancing from that approach, and at the same time to indicate some of the limits that we need to overcome in our search.

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Summary. Music performance may be thought as obeying different motivations. According to these, performance exhibits either a supportive function (related to *mimesis*) or an expressive function (related to *catharsis*). The interplay of tensions between both functions within a given music culture describes the particular relationships between composition, performance and reception characterizing that culture. Romantic performance solved such tensions between both functions in the light of the *myth of the genius.* Modernity solved these performative tensions with the aid of the *musical sciences*. Understood as *objective performance*, the latter displays a clear epistemological affinity with the psychological perspective of classical cognitive science. In the light of this affinity a body of psychological research in the field of music performance has been developed serving as a background for the studies described in chapters 5 and 6. Nevertheless the objectivist perspective in performance has been strongly criticized by the *new musicology*. The criticisms focus on four aspects: (i) objectivism does not acknowledge the individuality of the performance, (ii) performance is seen *apersonally*, (iii) performance is analyzed regardless of the context in which it occurs, and (iv) music is seen more as a text than as an act. In view of this last point a crucial characteristic of performance emerges: it is governed by a *performative way of thinking* - characterized by a time corresponding to the time of the piece – as opposed to a *projectual way of thinking* – in which the time of the project differs from the time of the work. The problem of performance time, considered as central to communication between performer and listener, will be tackled in the third part of this thesis.

Chapter 3: Music theory and performance

As Joseph Straus has affirmed, undoubtedly "*(p)rolongation is an idea of extraordinary power*" (1987, p.1) . Although many of its supporters affirm that the concept itself comes from compositional problems and techniques, systematized by contrapuntal pedagogical practices and performative realizations of the 17th century, undoubtedly its success in contemporary theoretical thinking is related to current interests rooted in the performative and compositional problems of the 19th century as much as in the epistemological basis of the musicological discipline of the 20th century. These matters contain topics about unity of composition, temporal integration of sequences of events in music comprehension, strategies of musical unification during performance, attribution of deepness to music, notion of hierarchy referred to general human cognition, and intersections between music and language, among others. In this chapter the concept of *prolongation* is presented according to the theoretical perspective from which it will be considered throughout the thesis. Since an exhaustive theoretical discussion would exceed the scope of this work, only some ways of understanding prolongational structure of music in current musicology are presented; then the its psychological and performative appeal are discussed.

3.1 What is prolongation?

Prolongation refers to the function through which a tonal event remains active (understanding the *activity* as the capacity of such event to delimit and modify the conditions for which another sound is considered more or less stable) in its context, even when other notes can be actually sounding (Cadwallader and Gagné 1998). In figure 3.1.a it is possible to establish that the a^4 (quavers)[1] of the third and fourth beat of bar 1 are

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[1] Registral designation system: c^4 is the central C

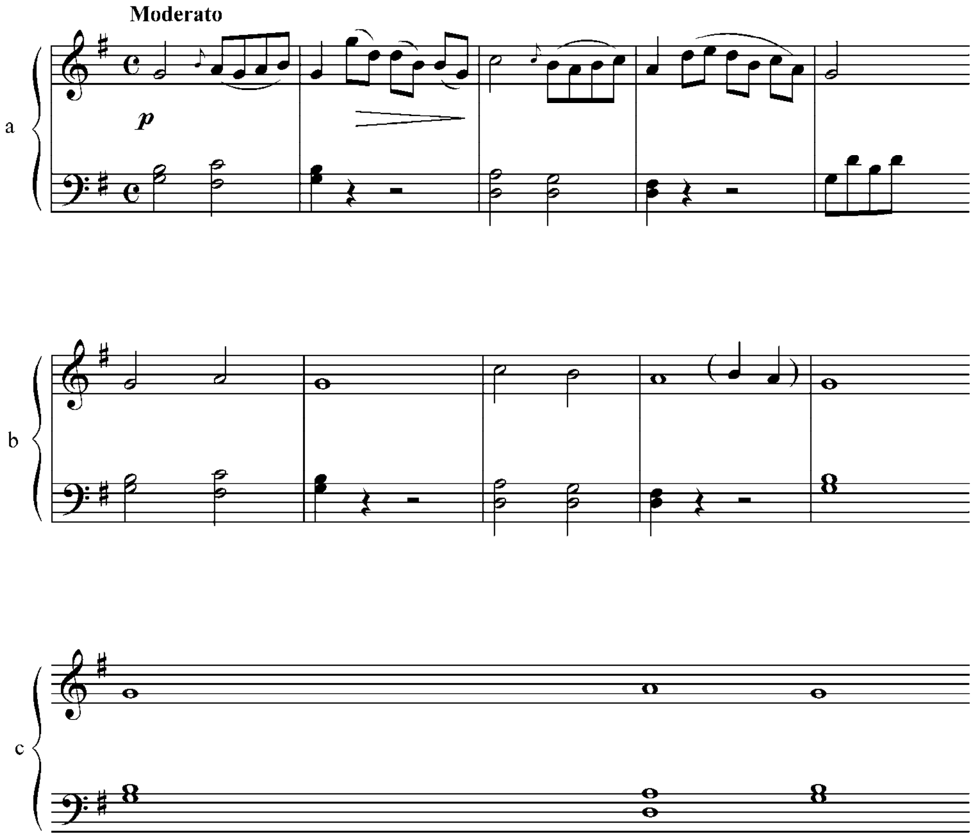

Figure 3.1. *Beethoven's Sonatina Kinsky-Halm Anh. 5. bars 1-5.* a: *original*; b *and* c: *reductions*

responsible for the g^4 eighth note and b^4 eighth note (of the weak parts of those beats) being relatively unstable. That is why it is said that those notes *are expanding and embellishing* the a^4. However, in essence they do not interrupt the global form of the melody that links first g^4 to a^4 and, finally to g^4, from measure 2. Therefore, the g as much as the b both *represent* the a in the instance when this note is physically absent, and consequently they prolong it. Nevertheless, the extent of this representation, as well as the nature and goal of this 'keeping active', varies according to the point examined. Within the background of Schenkerian theory (Schenker 1935), the word prolongation refers to "*compose*" (as a process), while in the work of Lerdahl and Jackendoff (1983), it refers to a particular type of elaboration that represents either literal repetition or functional sameness quality very close to the event in elaboration (Lerdahl 2001, p.15).

However, prolongation also refers to the structure constituted precisely by the notes that act as embellishments. This way, it is not strange to say, “the g^4 eighth note is a prolongation of a^4”.

From the notion of prolongation itself the idea of hierarchy emerges: a prolonged note embodies a hierarchical level higher than its prolongation. In figure 3.1.a, a^4 exhibits a higher hierarchy than g and b. The establishment of different degrees of structural importance for the notes causes a *structural association* of notes that are not immediately adjacent and are therefore not linked by contiguity but by the parity of their rank (Cadwallader and Gagné 1998). Thus, the a^4 appears structurally associated to the initial g^4 half note and to the g^4 of measure 2. By virtue of this structural association, g – a – g, constitutes a new *structural level*. Moreover we can start to distinguish a level, where the notes are related by their adjacency relation, note-by-note, called the *music surface:* this level (more *reduced* because it has less notes) is occupied by the notes among which a relation can be established not by adjacency, but by structural association of its hierarchy ranks (Cadwallader and Gagné 1998).

The way of representing, of making explicit the hierarchical relationships between notes, is called *reduction* (i.e. figure 3.1b is the reduction of example 3.1a).

Initially, example 3.1c introduces the idea so that these processes can be understood as recursive. For the moment, *recursivity* will be here presented as showing that the process’s result (of prolongation or of reduction) sets up a state of events in which the same process can be applied. Example 3.1c is the reduction of the reduction 3.1b, therefore it is also a reduction of 3.1a (although more abstract, more *reduced*). Music theory approaches (generally linked to music analysis issues) that use reduction as a representational device have been generically called *reductional models*. All the reductional models make use of the prolongation concept (or similar). However, they refer to different properties and functioning modes of the music structure, and, because of that, prolongation entails in each one of them different epistemological status.

Among several reductional procedures, there are some models which have reached a high degree of formalization. Although, for reasons that will be deeper discussed further ahead (p. 84 and ff), we shall work from the model of H. Schenker (1935), which openly ties the prolongational issues to the voice leading aspect of the musical structure, some of these models deserve a careful examination. As a comprehensive survey of them amply exceeds the scope of this thesis, and since they are suitably treated in musicological literature, only a brief review of three of them, is included in an appendix (see Appendix I). Readers not familiarized with that literature are invited to read it. The appendix includes a succinct glance at some literature that approaches prolongation in relation to. (i) voice leading (represented by the Schenker and his followers' ideas); (ii) generativity (from the Lerdahl and Jackendoff [1983] work and further developments), and (iii) melodic expectation (from the work of Meyer [1973] and Narmour [1977, 1990]). They share a number of characteristics, but also disagree with regard to many important issues, both epistemological and methodological.

The different prolongational approaches have also had different repercussions on performance studies. When investigating the causes of this disparity one faces some epistemological questions: what the prolongation is as knowledge object? And, from where is it possible to approach this knowledge object?

In the following section different opinions about tonal music's prolongational structure as knowledge object will be reviewed. These will lead us inevitably to a discussion about the psychological nature of the theories that model it. At the end of the chapter the main problems of performance that could be related to knowing prolongational structure are characterized. The aim of this discussion is, first of all to show the reader the state of the art by which the prolongational structure as it was described by Schenker has been more appealing as an epistemological foundation for the music performance realm, and, as a consequence, why that theory was taken as the departure point for the route followed in this thesis.

3.2 Prolongational structure and cognition

Although the perceptual nature of music is sufficiently acclaimed, musicology has not always approached the exegesis of music in experiential terms. In fact, many ways to analyse music, as well as the descriptions of many musical structural components, have been based on considerations that are independent of the listener's experience. On the contrary, theoretical formulations of prolongation are enunciated in experiential terms. Nevertheless, the extent of such experience is very variable according to the angle from which it is considered.

In this section we will examine to what psychology Schenker's original postulates ascribe, and how the successive discussions of prolongational issues, both in tonal music and in their extensions to non tonal music, tended to decontextualize it of its intellectual background, trying to understand it in terms of the dominant psychological paradigms in those given contexts. The reader will be able to associate this discussion about the historical trajectory of the relation between psychology and musicology concerning prolongational topics with that developed in the previous chapter concerning performative problems.

3.2.1 Schenker and the psychologism of music theory

For Schenker, music theory was a psychological theory that aimed at elucidating musical experience. From his first writings, Schenker showed an explicit psychological inclination. The psychology of the harmonic progressions and all that is psychologically effective in counterpoint, are just some of his pleas in defence of a psychological dimension of music theory.

It is not then by chance that the Schenkerian theory has been so attractive for many psychological perspectives on music (Bigand, 1994, Serafine, 1988, Sloboda 1985, Lerdahl and Jackendoff 1983, Deutsch and Feroe 1981). Cognitive music psychology saw in it a solid epistemological base to turn from being a set of isolated studies on perceptual phenomena related to extremely simple sonorous relations, into a discipline based on a theory of the experience of tonal music in all its complexity. Besides, it is connected with the intent of cognitive music psychology to take the formal descriptions of music theory as bases for explaining the cognitive processes involved in producing or receiving music (Krumhansl 1990). Thus, it would seem that psychology had looked for music theory (Krumhansl 1995). Nevertheless, in honour to the truth, it was music theory that was intending to go after psychology long before. Although it is clear that the preoccupation of Schenker was not in itself psychological but aesthetic, Schenkerian psychologism should be understood as part of the process by which aesthetics looked for psychology. Following the idea of Castro, Pizarroso and Morgade (2005), we could say that the work of Schenker is in "*the theoretical transition of the aesthetic metaphysics of the later 18th and early 19th century to the psychological aesthetics that is postulated in the middle of 19th century and that, in many aspects, remains currently in effect*" (p.197). In this way positivism and post-Kantian phenomenological psychology changed its old "categories of spirit" for new "categories of nature", without abandoning the philosophical speculation, but looking, through measurement and observation, for indicators of human behaviour. The aesthetic fact is projected to an empirical and analysable domain. For the phenomenological perspective of that psychology, the art work is the object of such analysis. Schenker followed this way of thinking, pursuing psychology from aesthetic motivations. We propose that in this sense he *contributed* to the creation of a psychology of music, trying to provide an explanation of certain mental functions (or better said of "the psychological *musical* function") from the examination and *measurement* of the musical piece. The nature of the piece's structure, as an object that is *outside* the subject, guarantees an objectively reliable substratum for the measurement. The *Ursatz* and its transformations operate in the *psychologicist* Schenkerian system as measuring tools of the musical work. It is possible to affirm that, in that sense (and only in that sense), the proposal of Schenker is almost *seminal* in a line whose pinnacle is the work of Lerdahl and Jackendoff (1983). However, the relation between the Schenkerian psychologism and the musical approach of the classical cognitive science ends here.

Nevertheless, the Schenkerian programme itself is probably the one that gave rise to the cognitivist chimera: *"If music exists as an organic creation, we should be able to perceive it"* (Schenker 1935, p.106) In the analysis of the art work, the psychology of the later 19th century was conditioned by two positivist assumptions: empiricism and comparativism. Both assumptions can be traced in the work of Schenker. The first assumption is seen in the *naturalist* preconceptions that penetrate the notions of hierarchical structure, organic form and acoustic principles in the development of the triad as the horizontalization of the natural series of overtones. The description of pitch structure in terms of an organic force that provides music with a sense of direction in its temporal unfolding of its underlying structure is a concrete manifestation of such a naturalistic conception. The second supposition has to do with the comparativist and classificatory perspective of the arts. Firstly, Schenker applied a sort of psychogenetic criterion when proposing that his model of underlying structure obeys not the music of a certain musical culture, but the pinnacle of the western music, to the ultimate goal in western music's evolution. The entire body of Schenker's work is consistent with the ethnocentric view that sees tonality and, in particular, deep tonal structure as the final goal of the History of Music. This ethnocentric perspective, that Schenker's cultural context allowed him to express without consideration, pervades certain more recent positivist approaches, although the current cultural context forces them to pronounce it more modestly (see Lerdahl 1988a). As a result of the allegiance of the Schenkerian programme to this *psychologism* of that epoch, some type of perceptible commitment had to exist. What Schenker could say in psychogenetic terms could also be expressed in terms of perceptible functions. In other words, if what it constitutes *the essence and the glory of the art of the West, the summit of the artistic creation, the manifestation of the genius,* etc. comprises the musical work, therefore it must be perceived and not the opposite way (like a given attribute is perceivable, then it is possible to say that it is part of the work.)

For historical reasons of intellectual and epistemological affinity it would be possible to talk, at least, about two levels at which cognitive psychology may be related to the very notion of prolongational structure: prolongation as perceptual representation and prolongation as conceptual representation.

3.2.2 Prolongational structure as perceptual representation

Schenker's followers in USA kept his perceptualist rhetoric without noticing that the English speaking epistemic context of the decade of 1960s was different from the German speaking one of the 1920s. Salzer and Schachter (1969) use for example expressions like "*the ear interprets*...(the prolongation)" (p.119) almost simultaneously with others like "*the* *ear perceives* ....” (p. 123), or “*the ear connects*….” (p.135). But the context in which these expressions are said implies an understanding of prolongation as an attribute of musical structure susceptible to be captured by perception, and therefore of being psychologically studied in terms of *percept.* Salzer’s endeavour (1962) is related to the tradition of ear training. It could be said then that Salzer speculated whether the prolongation can be listened to in structural terms and be labelled, as an interval or a chord can be.

In the same line, more recently, Cadwallader and Gagné (1998) set the perceptual extent of prolongational structure: “*[Y]ou will learn how to evaluate a musical context based on your hearing and perception of all aspects of that context*” (p.4).

Following the ear training tradition, Larson (1997) proposes a listening modality that abandons the objectivism of classical cognitive science to enlist himself in the stream of the experiential realism that links perceptual experiences and the development of the metaphorical thought (see Martinez 2005). He considers that to hear prolongation implies imputing relevance to the association between the events pertaining to a certain level. According to this, an *associative hearing* is activated in which the perceptively based processes of sameness, similarity and successorship have an important role. Prolongation results from transformations that turn the notes at a given level into notes at another level, and, in order for those transformations to be understood, they create similarity by preserving sameness in some elements and introducing differences through operations on the pitch patterns, based on identity and successorship. Prolongation, structural hearing, contextual stability, melodic forces, melodic continuity, and tonal induction and determination are components of the model (see appendix I) that are interrelated.

From Larson’s perspective, to develop the ability to listen to prolongations means to operate with the displacement of traces in increasingly greater referential contexts than constitute the different levels of musical structure. For this reason, he differentiates the psychological status of prolongation according to the structural level at which it is operating: at the deepest levels prolongation appears more as a merely intellectual process than as a perceptual process. In certain ways this idea becomes related to the Jackendoff's assertion (1983) that when we imagine music, some components of that representation are perceptual and others are intentional (see further ahead p. 69-71).

3.2.3 Prolongational structure as conceptual representation

The psychological subject of the Schenkerian approach is ambiguous. Unquestionably, many passages of Schenker's work allow thinking about a hermetic thought, in which the exposed knowledge is not accessible except, only, to *certain spirits* that can approach it. The analyst or musicologist (and quite often the performer) is the psychological subject present in the thoughts of Schenker and his followers in North America rather than the *experienced listener,* as Lerdahl and Jackendoff (1983) propose. From this perspective more than as a perceptual representation, the notion of prolongation is raised in psychological terms as a conceptual representation. For example, Salzer (1962) sees some processes of deduction and induction implied in his complex notion of *structural hearing*. Rather than a perceptual modality, *structural hearing* is a mode of thinking. In this context, *to listen to* prolongation implies, on the one hand, a deductive process by which the orientation of the global direction of the musical work is determined. Deduction is shown in the successive representations that are displayed in the graphs of voice leading and which follow a *deductive* route of successive eliminations of prolongational elements. Thus, the student (analyst) arrives *by deduction* to the deep structure of the piece. But, on the other hand, the nature of such reduced elements is manifested through "*the more important of the processes of structural hearing, the process of induction*" (Salzer 1962; p.

207). Salzer proposes that a student will have learned to listen in structural terms when he can *induce* the prolongation from its structure. Therefore, being more a conceptual than a perceptual training, Salzer's basic pedagogical strategy is the explanation of the voice leading graphs instead of techniques that directly involve the perceptual input. Thus, *structural hearing* is understood as the result both of the demonstration of the existence of a deep structure and prolongation, and an entire repertoire of their complex relations, and of the way in which such relations contribute to the musical work's coherence.

Close to this perspective is the point of view of Meyer (1973), who proposes that *implicative relations* (on which the prolongational structure in his system depends - see appendix I) are understood through inferences that the listener makes. Although Meyer speaks of *inferences*, the description of the process that he offers in most of the provided examples clearly alludes to deductive reasoning. Nevertheless, it would seem that the extent of the concept of mind and thought put into play is greater than that offered by classical cognitive psychology: for Meyer, the understanding of such relations in addition to those cognitive processes also involves some corporal and kinetic aspects.

The key thinking process involves a mind operating both with the transformations that *make the surface events abstract,* and including these abstracted events in the reductions that represent the deepest levels. In order to understand prolongation it is necessary to understand how a certain event was *transformed* itself such that it became abstract (Larson 1997). An event is promoted to a deeper hierarchical level when the mind can retain the transformational operation that justifies that promotion. Music theory offers in strict counterpoint a system that can give an account of the nature of those transformational operations in terms of mental (conceptual) representations.

Near this idea is a notion originally enunciated by Schenker and more recently revisited by other authors: *Mental retention*. Cadwallader and Gagné (1998) used this expression to explain a precise phenomenon. In example 3.2 the g^5 of bar 1 is observed as maintaining its activity throughout 4 bars at the end of which it is connected with the f^5. The activity of the inner voices throughout these 4 bars preserves the concept of *higher hierarchy* of the first note. In other words, the note's structural *ranking* is retained, that is to say, the manipulation of the mental object constructed by symbols and representations of the reality, not the physical object in itself. Thus, if the note is to be retained in their activity, such a note must firstly be conceptualized as hierarchically more important. Only by demonstrating that hierarchical status is the note retained in memory, and can maintain its activity. The mental retention generates tension between activity (of which it continues passing in the musical discourse) and immobility (of the retained note). This tension generates forces that can be thought as the responsible for the prolongation's cohesion.

According to DeBellis (2003) mental retention implies in the first place a *pre-*

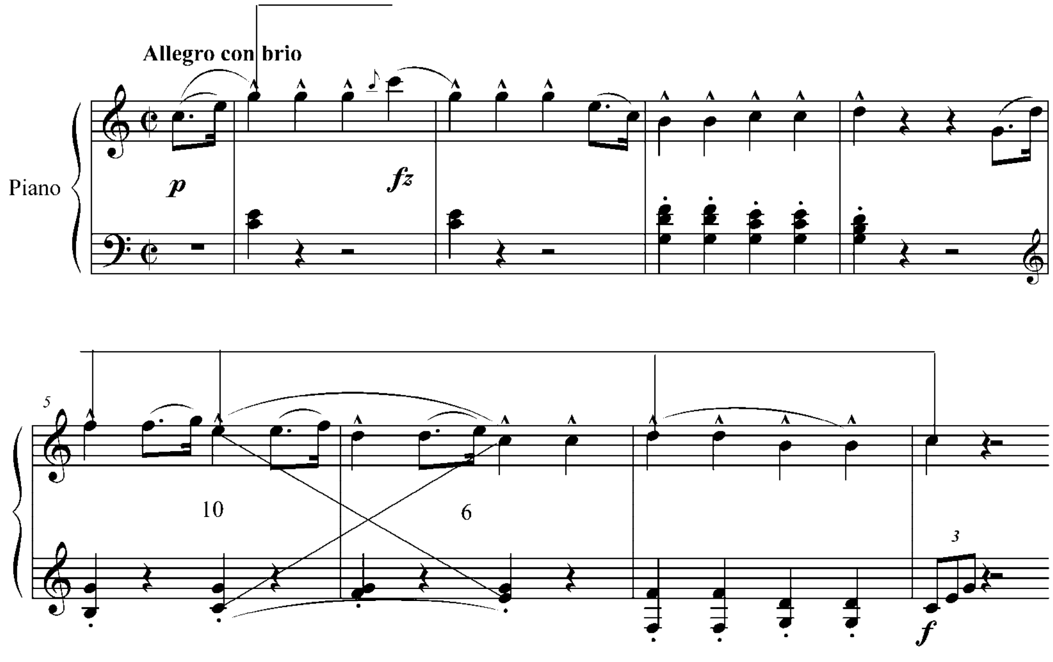

Figure 3.2. *Mental Retention in the Haydn Piano Sonata Hob XVI/35, I, bars 1-8 with analytical interpretation according to Cadwallader and Gagné (1998) p. 112*

reflective instance necessary to *discover* what note must be retained. That discovery is brought to consciousness by the reflection that allows the mental configuration of prolongation. When this is already formed, then that first discovery (that had been the effect of a reflection) is considered as “intuitively natural” (p.584).

For Schenkerian theory, prolongation fundamentally represents a coherence bond. In this case, to understand the prolongational structure is to interpret those bonds. The way in which the coherence is interpreted cannot obey a code. On the contrary, as the prolongational structure is the result of the synthesis of harmonic and contrapuntal forces that operate in divergent directions and generate conflicts and contradictions, to interpret the coherence that emerges from this structure depends on the previous (implicit) knowledge, a body of preconceptions and assumptions on which perception is organized. The prolongation at a certain level is susceptible of being understood clearly and coherently if the reality of the following level justifies it (Schachter 1999).

From this perspective, the prolongational structure could be understood in psychological terms, oscillating between the search of perceptual empirical bases and the exercise of heuristic, introspective and conceptual insights (Blasius 1996).

As has often been remarked, the classical psychological perspective has had serious conflicts with the Schenkerian program (the *GTTM* of Lerdahl and Jackendoff it is perhaps an effort to mediate in this conflict). Therefore, before exploring other psychological ramifications, the next section discusses more deeply the extent of the Schenkerian psychologism, in order to evaluate better its impact in performance and communication.

3.2.4 Schenker and cognitive science: A controversial relation

3.2.4.1 The attributionist perspective

In a very simplistic way, there is some affinity between the Schenkerian and the Chomskian rhetorical resources that encourages some kind of attempt of to compare both intellectual endeavours (Narmour 1977). The notion of deep structure, the hierarchical organization of structural levels, and the reduction concept are only some of these affinities. Nevertheless, any hurried comparison can be risky (Sloboda 1985). One risk consists of considering both theoretical corpuses as epistemologically equivalent. According to Keiler (1978a) this can lead musicology (in particular music analysis) to adopt an empiricist bias (which is both epistemologically and ideologically supported on numerous empirical undertakings in the music psychology realm; see appendix II) that is strange to it. Nevertheless, the opposite is also possible: the fact that that musicology had adopted an empiricist bias with the purpose of settling comfortably in the academic scope. In order to reach that aim, it was very important that musicology draws on compatible theoretical frames coming from other disciplines.

The second risk consists of understanding the reach of certain concepts of a theory in terms of the other. Sloboda (1985) supposes that Schenker considered the ability to form underlying abstract representations as an inexorable support of the listener’s behaviour (p.11). Undoubtedly this is a cognitivist attribution: Schenker’s real preoccupation about human behaviour is, in general, very limited. His idea of ability is more associable to the romantic concept of gift than to the cognitivist concept of competence (Keiler 1978a). On the other hand, Schenker’s idea of representation is also far distant from the idea of representation in terms of cognitive psychology. The voice leading graphs, unlike the tree graphs, cannot be understood as computational representations. On the contrary, they are like meta-linguistic undertakings (Keiler 1978b). Further ahead, Sloboda (1985) states that

“*Schenker would wish to claim that, at a deep level, all good musical compositions have the same type of structure, and that this structure reveals to us something about the nature of musical intuition”* (p. 12). Indeed, Schenker thought that good compositions were based on the *Ursatz* as a primary fundamental structure. Nevertheless, it is difficult to think of Schenker inferring aspects of the nature of the musical intuition from the structure of the deep levels of the composition. For Schenker, *Ursatz* is an a priori configuration and its knowledge is not intuitive but, on the contrary, it is the result of a development, the goal of a directed effort, or, as a last resort, a quality of genius.

Even the comparison for verifying differences between both theoretical systems may be noticeably attributionist. For example, Sloboda (1985) argues that: (i) unlike the Chomskian system, the Schenkerian one is an analytical and non generative system; (ii) *Ursatz* is discovered through recursive reductions of the musical surface, and unlike the Chomskian deep structure, that cannot be understood as a linguistic expression, Schenkerian deep structure may be appreciated in that way. Undoubtedly, Sloboda is right when he says that the Schenkerian system is not generative in the Chomskian sense of the term. The Schenkerian system does not fulfil the restriction of *immediate constituency* (although Martinez (2002) demonstrated the constituent nature of prolongation, their findings could only be applied to a *basic* level of the prolongational structure). In this way, Schenker’s theory cannot give rise to a grammar, although in many ways it has the appearance of one. Nevertheless, both the notion of *discovery* and recursivity that is so strongly used by neo-Schenkerian theorists is frankly debatable from an attentive reading of Schenker’s mature work. *Der freie Satz* is in fact an inventory of features proper to each level of the structure. If Schenker took upon himself the work of describing the background, the middleground and the foreground in such a detailed way, and if in those descriptions he established certain differences between internal levels, it is because the structure of each one of these levels is conceived as a different organization, and having a substantially different genesis. Therefore, the processes involved in Schenkerian analysis cannot be understood as recursive, in the terms of current cognitive science. Schenker has questioned himself the use of the term “repetition” to describe to the movement of “transformation level to transformation level” (1935, p. 18). The computational notion of recursivity better adapts itself to the reduction process (from the surface towards the deep structure). On the contrary, Schenker proceeded from background through successive transformations that give rise to varied configurations in the different intermediate levels, to reaching foreground. Therefore we suggest thinking about *abduction* rather than about *discovery* (as it is seen from p. 73) that adapts itself better to the notion of *circularity* of the discovery procedures that Keiler mentions (1978b). In addition, even going from the foreground toward the background, it is uncertain that we are able to understand the successive reductions, including an *Ursatz*, as musical statements. In principle, the deepest levels are clearly abstractions that avoid both rhythm and metre, and by this reason they are removed from the most typical temporal musical quality, and are therefore not possible to be understood as musical statements. As indicated above, the voice leading graphs are meta-linguistic expressions. Their purpose is to explain the voice leading functioning and the pitch component of music, such that they cannot be considered linguistically admissible as statements.

3.2.4.2 Beyond the attributions: The psychologicist context of Schenkerian aesthetics

Worthwhile arguments exist for considering the psychological interpretation above discussed as naive. While certain empirical evidence seems to support some of those precepts, another body of evidence shows that the psychological principles that rise from the Schenkerian theory should not be understood in strictly cognitive terms (Cook 1987b).

The hypothesis about a hierarchical hearing brought until its last consequences, the *Ursatz,* does not seem to fit within the intuitions of the experienced listener, who is intended to be modelled by cognitive musical science. In this case, what is the extent of Schenkerian psychologism? What aspects of musical listening does the theory suppose to model? The reach of the psychological in Schenker "*has to do with how things are experienced in particular musical contexts, and not with the physical or formal properties of those things considered in isolation.*" (Cook, 1987a; p.54). As Blasius (1996) argues, the application of the psychologicist rhetoric to the field of musicology from 19th century should be understood rather as a convention to refer the metacognitive study (that according to the author refers to aesthetic problems) than to the cognitive (or *pragmatic*) musical problem. In this way the preoccupation is centred in "*the critical examination of the psychic correlate of internal musical affect.*" (p.5). Considered in this way, an important psychologicist contribution of the Schenkerian theory has to do with graphically demonstrating certain intuitions about the differential experience of the events according to the context, often tied to the formal organization of music (Cook 1987a).

This has to do with a sort of psychology of totality, but with a strong idealistic foundation. For that reason, the idea of this *psychology of totality* does not have to be misinterpreted. As Blasius (1996) warns, it is not a reference to the school of *Gestalt*: "*Schenker's psychology (…)is fundamentally introspective, concerned with describing the experiential content of the passage, whereas the psychology of Koffka or Wertheimer is fundamentally distrustful of introspection*" (p.34). In this case, it is about a totality dynamized by the organicist slant of its descriptions and the phenomenological orientation of its method. Indeed, as exponent of the German romantic organicism (whose greater exponents can be seen in Goethe and von Humboldt (Keiler 1978b)), such *organic* totality implies its own possibilities of transformation. On the whole it is a mature organism subject to metamorphosis, and changes and transformations must exactly be understood as metamorphosis, rather than as computational operations. Then, from the point of view of an introspective psychology worried about the experience as individual and significant, how could prolongation be characterized?

3.2.5 Prolongation as intention

One of the basic precepts of the hierarchical prolongational theories argues that at progressively deeper levels the structure appears more and more organic, coherent, and organized like a whole, moving away from the complexity, variability, eclecticism, even disorder of its surface level appearance. Consequently, it is sensible to understand those underlying levels as *intentionalities*, that is, a kind of representation or mental state tied to things or states of the world to be realized (as a desire or state that such reality would have to accomplish) (Proust 1998). In general these *intentionalities* may be bound to propositions (propositional attitudes) or actions and/or perceptual states (Richard 1997).

In this sense, there is abundant evidence in the literature on prolongational theories of a tendency to attribute mental states to the described musical structures. One reads about “the *desire* of the note to reach the goal”, or that “the leading note *looks for* the resolution”, or the “natural *egoism* of the notes” etc. (Snarrenberg 1994). This goes far beyond a metaphorical usage of the academic language. It is clearly related to the “*epistemic propensity to confuse the known object with the subject that knows it*” (Riviere 1991, p.43). This epistemological position appears clearly in *Harmonielehre* (Schenker 1906).

According to Fink (1999), in prolongational reduction the conceptual representation opens a door to the derivation of the most superficial levels from background. But a different reductional operating force also exists in which the conceptual component is not so strong. For Fink, this is related to the intentionality that the listener exerts on certain salient notes (i.e. notes in a linear progression), by which "*linear dramas or 'mechanisms of desire' which ignore the intervening music*" are traced. In this way, intentionalities are compatible with the tendency to "*link up the high points of musical experience*" (p.107)

In this way, the depth - surface models explain how a listener's necessity is satisfied. The interdependence of events is not the result of systems of generation or transformational laws, but of an inherent interest to link certain distant events in the time with no need to explain the nature of the subordination of the events that link them.

In this way Larson (1997) considers that the experience of prolongation acquires meaning according to the way in which listeners assert their will to the musical stimulus. This is the base of the didactic approach of Salzer's *Structural Hearing* (1962), which is patiently and methodically developed, until it is imposed on the listener. The strength of the musical forces not only depends on musical structure, as this is shown on the score, but also on the listener's creative interventions. These creative interventions confer on the listener an active role in the structuring of the work. Interestingly, as Fink indicates, this role is related to the cohesion of the musical work in dramatic terms, which is extremely appealing to music performance.

Prolongation, viewed as staging for dramatic action, also carries us back to the tension-relaxation topic. But here, these terms are taken not in the static and abstract sense according to which the stability conditions of each note are fixed by hierarchical structures stored in the listener's long term memory (Lerdahl and Jackendoff 1983, Krumhansl, 1990, Lerdahl 2001), and which are activated during the mental reconstruction of the work. On the contrary, the tension-relaxation notion is presented here by the way in which each event projects itself towards future in the specific time of the musical work. The salient events give rise to a particular configuration of the musical work's time. In this context, prolongation emerges from the way in which the listener intentionally *fills in* the temporal interval that is opened between those salient events. Thus, prolongation configures the time representation of the composition (Imberty 1992). According to this perspective, the prolongational structure captures those structural aspects by which the salient events of the piece are linked to each other (for example the relational conditions to be “higher than...” or “louder than…” filling the psychological temporal space that separates one salient event from another one). Thus, the prolongational structure is a subjective projection of relations existing in the course of music. Such projection is directed to perceptual goals or, in Imberty’s (1992) terms, *points of perceptive condensation.* When the goal is reached, the understanding of the work takes place by means of the understanding of tension and balance relationships. From this point of view, prolongation is not be simply a “quality” of the musical structure, but rather a behaviour or a sequence of (psychological) facts that confirm a hypothesis.

It is possible affirm that this notion of the subject’s active intervention is intimately related to the genesis of the Schenkerian programme. As already mentioned, the Schenkerian psychologism emerges from an aesthetic preoccupation. The psychologists of the 19th century believed in the active and synthetic role of the will to put together expressivity and judgment and finally to reach aesthetic enjoyment. The psychological tendency of the 19th century outlines a governing principle which was able to put in order the experiential chaos transmitted by the senses or, in another perspective, to unravel or to catch the inherent harmony of nature (Castro *et al.* 2005). The affinity of this psychology with the Schenker’s ideas is evident.

In synthesis, the perspective of the prolongational structure as a subjective projection of the will on the set of salient events of the composition is congruent with the

Schenkerian formulation of prolongational theory and with the problems of configuration of the musical time and dramatic representation of the musical work that, as we will see in the following chapters, are crucial to understanding the communicational power of music performance.

3.2.6 Prolongation as sign

Prolongation can also be understood as a sign. As it was early proposed by Saint Augustine, "*a sign is something that, besides the species embraced by the senses, makes another thing go by itself to the thought.*" (quoted by Todorov 1972, p.121). Thus a sign has two specific faculties: it is sensitive, and displays the absence of something (Todorov 1972). In this way, this notion is compatible with the very definition of prolongation. Larson (1997) explained the idea of listening to prolongation as a process of meaning in which a sound is listened in terms of another. In this way, for Larson, processes of semiosis are included in the scope of the perceptual domain. The thinking related to prolongational analysis is associated with what takes part in the processes of semiosis that complement the purely perceptual processes (Cross 1998).

In a certain sense, all of Schenker's intellectual endeavour could be understood as an immense symbolic device by he examines many of his aesthetic preoccupations through the description of an ideal listener's intuitions (projected in the composer's *genius*). This symbolic device is built as a meta-language of high impact in musicology. For example, reduction is an heuristic built as a conventional symbolic system. The use of counterpoint in the exegesis of the organic coherence of the tonal composition is, in fact, a sign attribution (Blasius 1996).

3.2.6.1 Prolongation and interpretation

As Cook (1990) has argued, the prolongational structure of tonal music is a reified abstraction. This is, something that does not have real existence, an intellectual device that serves to generate a coherent body of arguments that are used for explaining manifest musical phenomena. In this way, the emphasis should not be put on the device itself but on the resultant explanation. For Schenkerian theory, the observable phenomenon is the musical piece's tonal coherence as an organic whole, and prolongational structure is an intellectual device used to investigate and to explain that coherence. Therefore, it is an imaginative construction that should be interpreted not as a literal description of the experience but as metaphor of the work itself. From this perspective, the listener's experience must imply processes more sophisticated than matching up complex structural patterns of the stimuli with the listener's descriptions (implicit or explicit knowledge) of the musical structure and which are activated before the presence of these patterns. In other words: to experience prolongation should be an *interpretative* act.

Thus, the subject of this experience is not an *ideal listener* but an *ideal interpreter*. However, it is necessary to discuss whether to speak of *interpretation* is useful for characterizing the way in which the prolongational structure can be experienced. At this point, at least three topics need to be dealt with.

In the first place, understanding interpretation in a very general way, i.e. as a process of meaning assignment, it is necessary to see how the meaning's characteristics affect the process itself. Taking Larson's idea that we can speak about *listening to the prolongation* as a form of *to listen to x like y*, we can establish a link between two domains, domain *x* and domain *y* (Zbikowski 2002). In essence, the domain *x* is a physical domain (i.e. sounds, the notes that configure the musical surface). For Eco (1990) we may have two different kinds of bonds between domains, depending on the nature of the domain *y*: a *semantic or semiosic* bond in which the domain *y* can present a very varied nature according to the listener's *intention*, and a *critical or semiotic* bond, in which the domain *y* is expressed in technical terms proper to music theory. Cook (1990) expressed a compatible idea when differentiating a *musical* from *musicological* listening. Also very near this conception is Jiranek's (1992) notion of meaning by *connotation* and meaning by *association*. Whereas association defines a subjective correspondence between domains, connotation defines a causal correspondence (controlled by an objective rule). The former is related to hermeneutics, while the later is linked to traditional analytic methods.

The semiosic-semiotic dichotomy allows glimpsing different but compatible interpretational levels. Throughout this thesis it will be tried to demonstrate that it is possible to identify the role that music performance plays in the semiosic interpretation of the musical prolongational structure on the part of listeners. For this reason, one of the aims of the first set of experiments reported here was to explore the nature of the domain *y*.

In the second place, the process of interpretation cannot be simplified as a matter of decoding. Purroy Chicot (1992) suggested the possibility of understanding the prolongational structure in semiotic terms as emerging from an *abductive* process. According to Charles S. Peirce, *abduction* is a particular case of synthetic inference "*in which we found a circumstance very peculiar that could be explained by the supposition of which it is the specific case of a general rule, and, therefore, we adopted this supposition*" (quoted by Eco 1990, p.207). In that sense *abduction* is proposed as a sort of "discovery logic". Briefly, abductive reasoning is the mechanism by which a rule is hypothesized from partial evidence, and the reasoning is built on the basis of both that hypothetical rule and that partial evidence. Abduction emerges from a circumstantial hypothesis provoked by a surprising component of that same circumstance. For Peirce, every scientific investigation, every *insight* and even every perceptual judgment could be considered ultimately as a means of abduction (Kim n. d.). In addition, abduction is the creative opening that has the interpretative process, by means of which, the subject extends its freedom to find verisimilitude in which is otherwise (inductively or deductive) inexplicable.

An epistemic community shares abductive habits, that is to say, habits by which rules are provoked that allow the members of this community to communicate to each other. This form of reasoning and communication is in the core of the Schenkerian epistemology represented in the graphic demonstrations of the deep structural levels. In them prolongation appears as the evidence that provokes a rule, and indeed that founds it. This idea, as we can see, is very near Larson's view (1997), according to which the notes' stability are defined themselves according to how *the notes themselves behave as prolongation*. In this case, "behaving as prolongation" is the immediate evidence that provokes the rule that establishes the contextual stability of the note.

The idea of taking immediate evidence to elaborate the reasoning takes part of the modus operandi of the Schenkerian analysis. This was the intended meaning by Schachter (1999) when saying that "*without some sense of background, one can't begin to understand the foreground (…and) also needs to understand the foreground to make sense of the background*" (p.198).

Finally, the third aspect refers to the relationship between aesthetic experience and reasoning. Although Schenker's aesthetic conception is very distant from Peircian pragmatism, it is possible to say that his epistemological position before aesthetics has related points? It has been indicated that the Schenker's preoccupation is aesthetic. For this reason he is concerned about the distinctiveness of the great musical art works, rather than in generalities about ways of listening to tonal music. Nevertheless, both his psychologicist rhetoric and his methodological approach implicitly espouse a search for universal laws about the behaviour of the music's tonal component. For Pierce, aesthetics implies a reasoning form that put together induction and deduction, looking for laws in the particular and the dependence of the particular in such laws. For him, aesthetic experience is a formalization that comes from individual perceptions and the individual event, starting from general laws (Kim n.d.). Schenker, like Pierce, connects the aesthetic experience to the act of reasoning, because he feels that aesthetic is bounded to governing laws.

These two psychological perspectives on prolongation (as intention and as sign) share the fact that both require certain explicit activities of the listener (performer, analyst, etc.) that involve both a subjective projection and the consideration of the context of listening, in order that prolongation can be configured in the experience. This issue goes beyond the classic perspective that considers the experience of prolongation as a representation controlled by processes regulated by grammars according to strongly formalized models (Chapter 4). The first empirical investigation on the role of prolongational structure in communication of expressive performance that will be attempted here is fundamentally based on this representational viewpoint, on the part both of the performer and of the listener, although as will be seen, it is possible to advance forward to more situated and pragmatic interpretations of the data. Nevertheless, in chapter 10, the empirical investigation will be more compatible to these two last ways to consider prolongation from a psychological perspective.

3.3 Prolongation and music performance: the performative appeal of prolongation

Performers usually do not speak of prolongation, or Schenker, or even of structural levels. Then, why do we speculate that the prolongational structure can play any role in performance and in what is communicated through performance to the listener? The idea of this section is to discuss in preliminary fashion how although performers do not often speak about prolongational structure, they are aware of some problems that are related to the issues that theoreticians discuss when speaking of prolongational theories.

Links between prolongational theories and music performance are frequently present in the literature. It is well known that Schenker had a deep interest in performance puzzles. In fact, it is possible that his theory, as it was developed throughout time, would not have contributed to such an important extent if he had not been impelled by this strong motivation for performance issues. As epistemologically transitional, the theory shows compatible aspects both with the romantic and modern performer. The prolongational structure may be a source of performative decisions, but the true bonds between structure and performance are almost metaphysical (Schenker 1926, 1935; Rothstein 1995)

More recently, positivist doctrines of musical analysis for performance usually consider the traits of the underlying voice leading as resources for performance. Nevertheless, even for these approaches, the relationship between the prolongational structure of tonal music and performance is very problematic (Berry 1989). Briefly, the analysis of the underlying voice leading is something like "discovering *the composition's soul*", and almost religiously it is accepted that this contact is good, although it is not known how it settles down and in what sense it can be useful.

For those who, as it was seen in the previous chapter, have reservations about establishing a linear relation between analysis and performance (Schmalfeldt 1985, Rothstein 1995) prolongational structure nevertheless continues to be central. But, moving away from objectivism, they try to find new relationships between them.

This means that prolongational theory has a sort of magnetism as regards musical performance. Some performative problems, all of them related to temporal nature of performance, which as Schmalfeldt (1985) remarked is an important gap between analysis and performance, seem to have some responsibility in this appeal. Next, three of them will be discussed.

3.3.1 The problem of unity

The role of prolongation in the attribution of unity to the musical work seems crucial: when musicologists want to give account of a composition's unity, the analytical descriptions of the prolongational structure would seem to be axiomatic (Cohn and Dempster 1992). In performance, unity is a central problem. It is strongly related to the problems of traversing the performance time by realizing sequences of actions that can be understood like parts of a whole. The unity problem is not considered here as a theoretical problem, as is usually the case, but as a pragmatic question of performative accomplishment. Nevertheless, its consideration cannot also avoid some aesthetic matters. As Schenker himself affirmed, unity may be seen as the value of a performance. In this sense, it is a topic that has been varying throughout historical time. Bellman (2000) investigated the performance indications that Chopin gave for repetitions and *ritornelli* (so typical in his style), revealing that problem of unity does not exist as such in performance (or at least it had other demands) during Romanticism. Nevertheless, this problem is definitively settled by period of Modernity. It is not infrequent to consider that one *mission* of the performance is to show the composition's unity (Cone 1968).

It can be said that prolongational structure, as a theoretical device, contributed to the objectivist relationship between analysis and performance when facilitating an analytical corpus that did not contradict the performance aesthetic objectives of unity. Other analytical models would be working against this goal when providing a more segmented perspective of the musical structure. The prolongational perspective tried to say to the performer that to analyse is not to partition the work, but on the contrary, is to fasten it together as a whole; and in that sense to analyse a piece seems to be related with playing a piece (Rothstein 1995).

The problems of playing are doubtlessly strongly conditioned by the problems of the musical surface, which often appears inhabited by contrasts, ruptures and discontinuities. This raises the question of *continuity,* which is directly bound to the performative restrictions derived from the instrumental technical-mechanical problems and the need of maintaining the performance throughout the real time. For the performer, then, to obtain continuity implies the ability to construct a whole under the pressures of those restrictions. Therefore, it can be said that the question of *continuity* represents the psychological, performative and operative side of the theoretical problem of unity. It contributes to the notion of *experiential* unity, as opposed to a mere theoretical unity (Maus 1999).

The idea of thinking about a sort of subordination of the musical surface (with the inexorability of all its details in performance) to a simpler and inclusive underlying matrix, is both psychological and methodologically very attractive, and serves to anchor the performance of such contrasts, ruptures and discontinuities to the pillars of that underlying structure. In that sense, the analysis of the underlying structure can almost be used like an instrumental technique, as a resource to obtain certain interpretative results. Furthermore, in light of the restrictions imposed by the performance’s temporality, related to the pressure of reviewing every detail of the surface and the complications that can be provoked at the motor level in the course of the performance, the possibility of taking hold of a representation that scaffolds the performance, revalues the analysis of the prolongational structure as a technical-performative resource.

These restrictions are not only a property of music performance: all the performative arts suffer from them. Thus, for example, in drama the problems of unity have been considered extensively. If the problem of the unit seems to be, in this way, a question of performance in general beyond the musical object in particular, is it sensible to approach the problem of the unity in performance using a theoretical-analytical resource that is specifically musical?

Contemporaneously with the development of Schenkerian theory, Stanislavsky (1922) developed the concept of “connectors” in dramatic performance. According to this, actors and actresses provide dramatic unity to their representation by identifying in the course of the play points that tie to each other in an underlying way (analogous to the points of *perceptual condensation*, mentioned by Imberty [1992]) from and between which they can establish relationships and lead their “psychical energy”. Stanislavsky was convinced that the best way to discover the intention of the dramaturge was in finding the *action’s thread* of the work, and that the relations between the parts and the whole were fundamental for such a conception (Magarshack 1968). In addition, Stanislavsky dared to go beyond this regarding the psychological aspects of this technique: he understood the ability of the actor to manage to hold the audience’s attention throughout the entire piece as of high priority, as the most accurate way to capture the spectator's attention. Thus, attention is a fundamental factor in the *psychotechnique* of Stanislavsky's system, which allows deriving the parts from the whole and, at the same time, guaranteeing the performance's continuity. The conception of unity of the piece that the performer has seems to appear while attention is oriented, and also in the way in which this orientation affects the expressive organization of the events throughout the time. The sense of unity, referred here to experience, is not inherent to the work, but is subordinated to the performer's execution. Performer actions might manipulate musical features in order to strength or to weaken the experience of unity.

3.3.2 The problem of directionality

References to motion are present in all musicological discourse; in particular, motion is a core notion that is part of the prolongational theories. The voice *leading* concept itself is alluding to a directed motion. Expressions like *structural goal, melodic direction*, etc. are a common occurrence in theoretical writings. Jointly, the directionality idea regulates the gradients of intensity, time, tuning, etc. in musical performance. At the same time, this notion contributes to define the phrasing etc. determining units in articulated musical speech, where the way of *saying* the musical discourse is organized in the course of performance. From this perspective again, the analytical jargon is clearly tied to the language used to characterize performance. In the same way, Schenkerian graphic analysis devices, with their ties, bars, arrows and crossed lines, contribute to this notion of directionality.

The idea of an underlying voice leading becomes a device that organizes performative variables in relation to the passed time and the goal to reach. Performers use to speak about "directional goals" concerning melodic, harmonic, rhythmic movements, etc. In other words they attribute *intentionality* to the musical structure. From this perspective, to discover the underlying voice leading is analogous *to discover the intentions* of the musical structure. The performer's behaviour would be regulated by this *mentalist* allegiance of the musical work.

The idea that notes *go towards* or *pursue a goal* is therefore compatible with many performative strategies. These strategies can play an important role in relation to certain important aspects of communication between performer and listener. The idea of *intention* that performers may assign to music is comparable with the anthropomorphic allegiance that listeners tend to express (Watt and Ash 1998). Certainly, according to Sloboda (1998), to interpret music is to map onto the musical process not only the structural characteristics of the piece, but all other characteristics that arise from the psychophysical context of the musical fact. This mapping is neither associative nor iconic, but involves an abstract and deep representation of such components.

This depth is related to the representation of dynamic aspects such as force, motion, continuity, unity, etc., that is either entirely imaginary, or that finds a correspondence in processes involved in music performance - such as motion. A possible consequence of this abstraction can be the representation of those dynamic aspects in anthropomorphic terms that give rise to the generation of moods or *virtual characters*.

In summary, the analysis of prolongational structure alludes to directionality problems that are similar to the notion of directionality that allows the performer to regulate the expressive gradients in the configuration of the performance's *phrasing*. This idea of directionality implies an attribution of intention whose representations are compatible with anthropomorphic, kinetic and dynamic musical representations that the listener can share with the performer.

3.3.3 The problem of depth

Attributing intentions, shaping anthropomorphic, kinetic and dynamic representations are ways of *symbolizing* music. In the building of musical symbolic thought, the notion of *surface-depth* occupies an important place, contributing with two significant elements: on the one hand the idea that something deep exists, providing cohesion and modelling the experience; and on the other hand the intuition that there is something that must be discovered.

Saying that music has depth and surface means that the components of the structure are organized into different configurations, depending on whether all the elements (point by point) of that component are considered, or as only some of then are considered according to a given reason. For Fink (1999) it is not possible to verify *objectively* the notion of depth. For that reason, the notion of depth is an idea that remains of symbolic status. The value of the metaphor is associated with its utility for analytical technique. Nevertheless, it is possible to think that the notion of depth has to do (as it will be seen in chapters 9 and 10) with the temporal aspects of the musical experience. In other words, it is possible to speak about a surface and a depth, because we have possibilities of experiencing different temporalities in music.

Fink (1999) affirms that the dialectic depth-surface brings the implicit belief that all great work of art has an organic quality that appears like a whole, like a totality. In other words, the notion of depth allows us to explain and to understand the piece’s unity in the diversity of the events that constitute it. Nevertheless, it is possible to refer to the notion of depth in the terms of Sloboda (1998): it is not a depth which simplifies the diverse, that become the unequal homogeneous, but is a depth that allows experiencing the musical work beyond the evident, beyond the apparent notes, durations, and configurations.

This is related to the idea that there is something to discover. We have seen that this idea colonizes the mystic of the romantic performer, but also impels the search of objectivity in the modern one. The idea of depth allows understanding the performer's task as the one of *drawing veils*, leaving manifest what is indeed present, although not still evident. The performer is the one that can see that what is hidden and that also has the power to exhibit it or not. We will see in the following chapters that this idea dominated the scope of the studies of performance for decades.

3.3.4 Advantages of the Schenkerian approach concerning performative issues

Although, both *generative* and *melodic* approaches - the *GTTM* (Lerdahl and Jackendoff 1983) and the *IR* (Meyer 1973, Narmour 1977, 1990, 1992) theories respectively (sketchily described in Appendix I) - explain prolongation, throughout this chapter we have focused on the *voice leading* perspective, which is mainly represented by the work of Schenker. The reasons for this are not only historical.

Some points of affinity between the prolongational structure and the practice of performance have been indicated. In such affinity a tendency to consider prolongation not only in classical terms (concept and percept) but also as intention and sign may be observed. The inclination towards Schenkerian theory for undertaking the investigation on communication in performance has to do with this.

In Schenkerian theory prolongation is understood as transformations of a deep structure throughout a process that goes from it towards the musical surface. The prolongational structure of *GTTM*, on the contrary, is not based on voice leading but is derived from the musical surface through reductional process, with strong incidence of the other structural components (metrical, grouping and time span reduction). For this reason segmentation is an almost inexorable operation in the attainment of this reductional process. Unlike the prolongational approach based on voice leading, *GTTM* understands the art work's unity by including the notion of hierarchy concerning its temporal units in the consideration of its other components also. The composition's unity is understood from the splitting of the musical surface. From the psychological point of view it turns out counterintuitive to use it as a technical-performative tool, as was proposed in this chapter. The very concept of hierarchy in Schenkerian theory is more useful for configuring performance that the one of *GTTM* since the former does not depend on the strict relation of *dominance - subordination* of each sound (see appendix I). This allows seeing, as it was explained above (p. 69) prolongation as intention, characterizations that do not fit with *GTTM.*

Compared with the notion of prolongation provided by the *IR* model, the perspective based on voice leading has the virtue of maintaining the associated idea of depth as linked to those of unity and directionality. Therefore, it is possible to assume that the strong appeal of prolongational structure based on *voice leading* terms have for theoretical studies about the practice of performance come from the fact that they capture the notions of unity, directionality, and depth in a such explicit way that many theoreticians assume them as to be truths in fact. Prolongational structure in Schenkerian terms may by a means of giving the performer a particular way of grasping the structure which may be a key for communication:

> *"A performer who has grasped an extended piece in Schenkerian terms may be able to bring to his performance a higher degree of large-scale rhythmic or dynamic shaping just because he has a reflective awareness of the music's structure that exceeds anything that is ordinarily experienced by the listener. In*

> *other words, the value of a Schenkerian interpretation of a piece lies precisely in the extent to which it diverges from the listener's everyday experience"*
> (Cook 1990;. 4)

Implications of this *long scale* awareness can be explained by understanding prolongation as cognition beyond the strictly representational, as was considered in this chapter. Suppose that a Listener (L) listens to a performance by a Performer (P) and makes a semantic interpretation of it – that is, he or she is sent to a concept, an image, an emotion, a state of the world, etc. By all means this is feasible, since what "exceeds anything that is ordinarily experienced by to listener" (L) is the semiotic interpretation. But, after that (P) configures a semiotic interpretation, including prolongation, which was achieved through a process that, surely, has very little to do with "the listener' s everyday experience". It relies instead on score visualization and analysis, many reiterations, translations to a chain of physical actions to give rise to the performance, etc. From this interpretation (P) modifies his or her internal representation of the piece, giving rise to changes in the microstructure (timing, dynamics, etc.) of the performance. In the same way that Larson (1997) denominated *structural hearing* to the action of listening to a passage in prolongational terms (listen to *x* in terms of *y*), we could say that, in this example, (P) played a *structural performance* of the passage when "performing a passage in prolongational terms" (in fact, in order to avoid confusions, we prefer to talk of *prolongational performance*). If these microstructural modifications take to (L) to a different semantic interpretation, we will be able to say that the listener *interprets the prolongation*, although this interpretation is semantic (non semiotic) yet. In other words, it can be said that prolongation is playing a role in performer-listener communication although the latter (and, as we shall speculate further, the former) cannot give a *critical* account of it. The absence of that critical awareness does not cancel the communicational bond (Rothstein 1995). This line will be explored further (Chapter 8 and 10).

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Summary. *Prolongation* is a widespread concept in music theory. It alludes to the phenomenon by which an event maintains its activity though not physically present. In Schenker's theory prolongation appears as related to the development of voice leading and is therefore subordinated to strict counterpoint principles. In other theories (Lerdahl and Jackendoff 1983; Meyer 1973; Narmour 1977) prolongation is subordinated either to grouping and metrical structures or to expectations produced by the melodic surface. Although these approaches are highly interesting, the Schenkerian perspective seems to be more compatible to music performance concerns. Thus, this approach appears as directly linked to very conspicuous theoretical problems of music performance. These themes include the topics of *unity*, *continuity and directionality*, and *depth*.

The treatment of the concept of prolongation as an object of knowledge has been diverse. Basically, as concerns its psychological condition, music theory has approached it either as a percept (a perceivable attribute of the musical structure) or as derived from high level conceptualisation and/or reasoning processes (prolongation as a concept). In spite of Schenker's own psychologicist rhetoric, it has been argued here that these perspectives come from a sort of "*attributionist*" tendency both in English speaking musicology and in the field of psychology of music as regards the theory. It has been argued that these perspectives led to consider the theory from a psychological perspective associated to classic cognitive science. However, it is also possible to consider the notion from an epistemologically different perspective more compatible with some alternative psychological paradigms. Consequently, prolongation may be seen both as *intentionality* and as a *sign*. As a result, prolongation can be understood as communicational content from both an *interpretative* paradigm and from a psychology of intersubjective communication.

Chapter 4: Communication in music performance and cognitive science

As has been introduced (Chapter 2, p. 38), communication in performance became an academic realm in its own right from the development of the generativist ideas. This field was thereby strongly influenced by the cognitive revolution and English speaking structuralism. In this chapter we will briefly examine the most important contributions that this approach has provided for the study of this issue. The expression *generative paradigm* is used here almost in an interchangeable way with the expression *classic cognitive paradigm*. In that sense, most of the theories and models developed to account for music communication, are based on important findings of cognitive music psychology (the most relevant to the prolongational issues are reviewed in Appendix II). Although generativist theories do not represent the entire classical cognitive science perspective on communication in music performance, they are undoubtedly predominant in this. The qualifying *generative* is used in a very wide-ranging sense, taking its meaning mainly from the field of studies in linguistic interpretation, as opposed to other communication paradigms in which both stimuli and processing are not considered computationally, as is the case here. All other interpretations of the term *generative* are beyond the intention with which it will be used in this chapter.

4.1 The *generative paradigm*

The *Generative Paradigm* is based on the idea that perceptual and understanding processes basically consist of integrating the incoming information to some kind of more integrated informational structure. In this fashion, action processes are also provoked from more integrated action configurations. In every case, this more integrated structure, lodged in the mind, constitutes a coherent structure, and is sufficient to attract new information. This more cohesive organization mostly consists of two types of components: (i) mental representations and (ii) a set of formal manipulations that are carried out on those mental representations. Understanding and action only take place due to those formal manipulations, without any kind of deeper tacit understanding (Jackendoff 1987). Accordingly, action and reception mental structures are either the same, or are directly linked. Action and perception consist of composing information in a coherent whole with previous or integrated information, from which to reinforce (or undermine) that level of previous integration by including the new information.

Importantly from the psychological perspective, according to this paradigm, we do not have to decide what is the most relevant information to understand, but we must connect it to previous knowledge structures. Interestingly, those previous structures are dynamic and present permanent transformations every time new information hits them. From the epistemological perspective, the generative approach establishes a system or structure of production (of knowledge) that is independent of the effects that it causes (Eco 1990).

For many reasons, this paradigm has been extremely attractive for approaching music performance as an object of scientific study. One of these is that it understands performance as a domain that is developed through ordered stages according to the formalization levels of the suggested models. Due to this, in music performance, the paradigm is easily oriented towards the acquisition and development of performance skills problems. Nevertheless, the most important appeal is that by this paradigm music performance is *naturally* related to musical structure, a relation that, as it has been seen, has troubled both theoreticians and performers for years (Stein 1954; Cone 1968; Schmalfeldt 1985; Berry 1989; Dunsby 1989). The generative paradigm comes to reinforce the concept of a skilful performance *as being at the service* of the musical structure, clarifying it before the listener's ears. Consequently: (i) the performer is a means *of approaching* the sender's (the composer's) message to the receiver (the listener); (ii) communication fulfils a *didactic* function; (iii) the specific content (specific meaning) to be communicated is the musical structure; (iv) performers, as scholars, know their audiences and use, consequently, the rhetorical means necessary to enable them to know the musical structure; (v) those means conform to a common code between the participants in the process that allows for communication; (vi) communication is achieved when the receiver (the listener) captures the performer's intention.

Features of phrasing (Kronman and Sundberg 1987; Repp 1990b, 1992a, 1995a), metre (Sloboda 1983), rhythmic grouping (Clarke 1985), and texture (Palmer 1989; 1996), among others, are compositional characteristics that the performer can clarify. In all cases, the gathered empirical evidence that endorses such an affirmation is interpreted (i) in terms of the existence of an available relatively structured body of information on the part of listeners to which they connect the incoming information and (ii) reciprocally, on the part of the performer, in terms of a previous correspondence between the structural knowledge of music and concomitant action patterns, to which the musician connects the structural information provided by the score. Specifically on this point, the generative paradigm is supported on three types of evidence (Palmer 1997): (i) the performer's ability to replicate the same expressive pattern with minimal variability between performances; (ii) the ability to change the interpretation of a piece and to produce a different expression with relatively little practice; and (iii) the ability to sight-read a non familiar piece with appropriate expression.

It is not a trivial fact that other structural attributes associated the composition's tonal coherence have been less explored from this perspective. Nevertheless, in a remarkable study, Thompson and Cuddy (1997) tackled this subject, exploring whether the perceived distance between keys in modulating passages depended on some performance particularities. Their findings revealed that the expression in performance contributes significantly to the perception of the distance between keys, and that this contribution depends on the distance to the arrival key. In addition they discovered that it was not only global expression contributed to this end, but that the expression of each differentiated voice (for example, differentiated timings between the different voices) was the most influential. Linking these results with other studies (Palmer 1989, 1996) that promote the idea that expression contributes to defining the individuality of the voices, it is possible to speculate that (i) the expression of separated voices contributes to the experiential configuration of the voice leading (a tonal coherence resource); (ii) this configuration of the voice leading contributes to understanding (the logic of) the tonal relocation, and (iii) therefore that understanding affects the psychological distance perceived (the *more logical* the relocation, the closer the perceived distance).

The structured knowledge on which communication is maintained can adopt different shapes. Next we will examine those that have been approached the most.

4.2 Rule systems

Typically, the formalizations that more appropriately adjust to the generative framework adopt the form of rule systems according to which knowledge is organized. Consequently, communication is feasible basically because those to whom the communication is addressed have in their minds identical systems of rules - they share those more integrated informational structures. The system is an abstract construction that intends to explain available data by generating *hypotheses* to examine new evidence (Salkie 2001). Thus, this modality of formalization has allowed a scientific treatment of the linguistic problems with important epistemological implications. Briefly, the formal system is obtained from a partial observation of the reality. This system gives rise to the formulation of experimental hypotheses that allow obtaining new empirical data in order to confirm or reformulate such formal systems (Sundberg and Lindblom 1976).

In the field of behavioural studies, these ideas encouraged a research programme in which a great number of behavioural aspects began to be understood as *grammars*. According to Clarke (1989a) it is difficult to establish a definition of a grammar that includes a clear distinction between aspects that clearly appear to be grammatical from those that have to be considered as such. Accordingly, a grammar should ideally be a small set of rules "*which will account for a large (in principle infinite) number of diverse utterances*" (p.17). Besides, a grammar should permit the distinction between *"utterances that are acceptable in the language, and utterances that are not."* (p.17). In order to accomplish such a formalization, a generative grammar must separate the linguistic from the non-linguistic (contextual) properties of a statement. Thus, the grammar describes a common linguistic structure shared by many statements. In this way this perspective is anchored to the syntax of the information. This fact gives the approach a robust computational value, which is why it has had a strong impact on cognitive psychology.

Some important concepts in this approach have been relevant to studying communication in music performance. One of them is the distinction between the *competence,* or the knowledge that speakers have of their language, and *performance* that is, the real use that speakers make of their language. Competence represents, to a certain extent, all the common patterns found among the speakers of a given language. Psychology bases itself on them to describe part of the speaker’s mind. Thus, this psychology is based on an idealized subject characterized by empirical evidence of common behavioural patterns. The characterization of the system of common knowledge that constitutes the language is, from this perspective, what allows it to explain individual behaviours and to characterize the speaker’s mind.

Other relevant concepts for our aims are the notions of: (i) *Code* - a particular type of rule system that ties signs to meaning, connecting messages (internal representations that constitute the object of communication) with signals (external modifications of the physical environments, that a communicator produces and that can be recognized by another person); (ii) *Transformations* - a special type of grammar rule that allows operating on a statement, transforming it into an admissible statement; and (iii) *Deep structure* – originally alluding to the mentioned abstractions, this comes from the idea that a statement can be represented in progressively more abstract ways, and that the successive levels of representation are linked through specific rules. By opposition, the concept of *surface structure* emerges, representing the statement as it appears in reality.

In short, the generative theory itself has produced an important impetus for studies on communication due to the rigour of the formalizations of its descriptions of theoretical structure, the computational value derived from them, and the scope of the concepts on which its epistemological frame is based. In addition, and particularly interesting for music, generative studies in linguistics developed very useful concepts for understanding musical processes.

4.2.1 Preference-rule systems

In the context of the generative approach certain special systems, called *preference rules* deserve a separate section. Although developed for musical purposes (Lerdahl and

Jackendoff 1983; Temperley 2001), they can be extended beyond the musical domain. Contrary to the other systems, preference rules attempt to formalize aspects more related to semantics (Jackendoff 1983; 1987).

Preference rule systems are mainly applied when the conditions in which they operate are susceptible to being scaled in a continuum. In addition, these kinds of rules can in certain circumstances be sufficient but not necessary. This means that such conditions are able to cause a certain effect, but nevertheless are not necessary to cause it, as there may be another motive causing that same effect. Jackendoff (1983) says that the preference rules systems are conceived because well-formedness rules cannot explain all the cases of very complex structures: "*these rules establish not inflexible decisions about structure, but relative preferences among a number of logically possible analyses*" (p.132). Thus, these systems show an interpretational bias in that (i) the more integrated information is not an a priori system, but derives from the implementation of the rules; (ii) the rules are applied heuristically instead of algorithmically; (iii) thus, their implementation depends on the subject making a kind of judgment (preference, coherence, salience, stability, etc.); (iv) there are overall guidelines for establishing contextual links that decide on the interpretation of a certain information (see chapter 5, p. 167).

The preference rule systems come to fill many of the gaps that other rule systems leave, without losing its computational capacity. They come into play whenever one of the following possibilities occurs in making relational judgements:

> *"(1) judgments of graded acceptability and of family resemblance; (2) two or more rules, neither of which is necessary, but each one of them is under certain conditions sufficient for a judgment; (3) balancing effects among rules that apply in conflict; (4) a measure of stability based on rule application; (5) rules*

> *that are not logically necessary used as default values in the face of inadequate information"* (Jackendoff 1983; p. 152).

Although preference rule systems admit the permanent reconstruction of the system on the basis of the way in which preferences are applied and in the search of the system's stability, they do not give any account of how this stability is judged.

4.2.2 Rule systems in music

In the field of musical studies, the generative paradigm is explicitly approached in a pioneering article by Sundberg and Lindblom (1976), which attempts *to formalize* melody through rule systems from some parallelism (hierarchical and constituent structure) with language. Nevertheless, it is possible to back track the interest in rule systems as bases for music from a long way, both in theoretical concerns and practical assumptions about oral tradition music (Clarke 1989a). Such interests made the affinity between music and language, particularly the idea of a musical grammar, become important both in music psychology and in music theory.

The work that definitively installs the explicit concept of generative grammar in music studies is Lerdahl and Jackendoff's (1983) *Generative Theory of Tonal Music*. According to them, a musical piece, like language, "*is a mentally constructed entity, of which scores and performances are partial representations by which the piece is transmitted*" (p. 2). *GTTM* clearly oriented music theory towards the cognitive sciences. The authors are strongly committed to studying the *understanding* of music rather than with aesthetic concerns.

The high degree of formalization of the theory is responsible for the enormous attractiveness that it has had among music psychologists. The theory, raised like a monumental formal system that describes the hierarchical attributes of tonal music according to specific rules, makes the application and the development of the generative paradigm as epistemological bases of a series of works in the field of music psychology possible. In this way, the theory works like an incessant source of hypotheses that stimulates the searching and collection of empirical data that also allow the reformulation of the hypotheses (Deliege 1987, Deliege and El Ahmadí 1991, Dibben 1994). *GTTM,* in addition, inaugurated a theoretical epistemological field that gave rise to manifold formalizations of different structural components of music (Temperley 2001, Fessel 1996, Rodríguez 2003) with direct applications in very diverse fields, from artificial intelligence to aesthetics.

4.2.3 Rule systems in music performance

Most of the studies of performance gathered empirical data giving rise to the formulation of hypotheses fitting the shape of the rule system. These, in turn, were able to generate new data or predictions. For example, Sloboda (1983) found that performers use certain timing, dynamics, and articulation patterns to convey an intended metre. Thus, he enunciated three principles (that can be translated into a rule system): (i) the expressive variations serve to identify the main metric subdivisions; (ii) notes with greater impulse are played more *legato* than the preceding ones; and (iii) notes with greater impulse are played louder than preceding and subsequent ones. For her part, in the analysis of expert performances, Palmer (1989) identified three expressive patterns intended to emphasise diverse structural features: (i) the chord asynchrony pattern, by which the different texture lines are *segregated*; (ii) the rubato pattern, used to emphasize the limits between formal units; and (iii) the overlap pattern that serves to emphasize a texture line over the others. An explicit and formalized generative approach to music performance has been proposed by Clarke (1988). Two aspects of his proposal are relevant. Firstly, he hypothesizes that performers configure the musical piece in their minds in the course of performance (in real time), in terms of the hierarchical structure notion from the generative approach, which contributes to motor and expressive control in performance. Secondly, he identified a series of *acoustic codes* which the listeners learn by being immersed in the same musical culture, allowing the communication of some structural features from performers to listeners.

Sundberg and his colleagues (cf. Sundberg, Friberg and Fryden 1991; Sundberg 1993; Friberg 1995) have attempted to model the performer's intuitions related to the communication of musical structure. For this purpose they developed an *Analysis-by-Synthesis* procedure. From the intuitions of an expert performer they formulated a series of rules for *synthesizing* music performances that simulated live ones. The procedure assumes that if the simulation is successful, the rules that were used for the synthesized performances can be understood as attributes of a real performance. The set of rules codifies the use of durations, loudness, tuning, and vibrato amplitude and frequency as expressive variables. In that way the rule system not only regulates the performer's actions, but also the listener's decoding of these actions. In this sense, many of the studies adopting this approach have also examined whether the listener is successful in decoding the performative guideline. This success depends not only on the specific function that each rule fulfils, but also on the extent to which such a rule is implemented. For this, the notion of *perceptibility threshold* is crucial in order to verify the *amount* of application needed for the intended action to be *recognized.* Sundberg (1993) affirmed that the way in which the listener decodes information coming from a performance is not exclusive to music, but is observed in other domains of human communication such as language. In this way, the knowledge that the listener requires in order to decode an expressive action in a given music performance, due to being more general, is acquired through very diverse communicational practices. For that reason the expressive sense of a musical performance can both be recognized and appreciated by people who lack any kind of specific musical training. Axiomatically, this procedure offers immediate derivations to the field of artificial intelligence (cf. Friberg and Sundberg 1995).

Close to this procedure, Clynes proposed the theory of *composers' pulse* (Clynes 1983, 1995; see also Thompson 1989; Repp 1989, 1990a). This theory can also be recognized as a set of rules that tie a particular rubato pattern to each particular composer. Notion of *composers' pulse* models the idiosyncratic stylistic characteristics of those composers, linked to the piece's rhythmic shaping and fluidity of movement in performance. In this way a piece is suitably interpreted if the performance obeys certain timing patterns that are proper and idiosyncratic for each composer. Therefore, the *composers' pulse* may be understood as a set of rules related to a very sensitive aspect of academic music performance, namely, its stylistic concern. However, as a clear objectivist account of music performance (pp. 34 and ff), this theory ignores some contextual aspects of the concept of style, associating it only with features on the score.

4.3 Schemata

Some researchers have asked themselves why are performers not able to play without expression, even though they may attempt it. Numerous studies (i.e. Palmer 1989) revealed that even expert performers cannot avoid any kind of expressive deviation (rubato patterns, changing dynamics levels, vibrato patterns, etc.) systematically applied according to values that are significantly different from the normative ones (in general displayed by the score) even though, frequently, performers are not aware of it. Similarly, listeners tend to consider a *deadpan* (inexpressive) performance as displaying systematic microstructural deviations to some degree. In other words, to a certain extent, systematic deviations are not considered as expressive. This implies that a level must exist below which the human perceptive-motor system is not able to detect expressive differences as such. Thus, when can a deviation from a normative value be interpreted as *expressive*?

Schema Theory, which is viewed seriously and applied convincingly to several phenomena in music psychology, offers important ideas for investigating this communicational issue. A schema is an integrated general knowledge structure which does not refer to the information in itself, but to the organization of that information. It was suggested that certain musical structures would function as schemata (Krumhansl 1995), incorporated by enculturation in the cognitive system (Castellano, Bharucha and Krumhansl 1984) and lodged in long term memory. For example, tonality may be understood as a schema that specifies the stability conditions of every event within a given context (Bharucha 1984). The context – a chord, a scale – activates the schema in terms of which incoming events are understood as stable or unstable. Therefore the schema makes musical information processing in real time possible.

The power of schemata resides in the information contained about how all the different attributes of the input are related to each other. In addition the schemata's most important advantage is that they can be used to predict what will probably be likely to happen. Applied to communication in performance, this concept suggests that expression in performance is understood on the part of listener because of the existence of certain typical expressive patterns in the mind that act as templates against which the present performance is compared. The studies on timing detectability are relevant to this issue. The powerful ability of expressive discrimination that listeners who are familiar with a particular performative style can exhibit is well known; most of their value judgments about performances are based on this fact. Listeners can discriminate *natural* – as *human* – performances from *non-natural* – *exact, quantized, computer based* – ones. But, at the same time, they do not mistake *non natural* for *non expressive – deadpan.* This means that the deviation the performer realizes although attempting to performance without deviations, is captured by the listener (Clarke 1989b).

This implies the existence of a basic temporal deviation that we cannot conscientiously account for, but which characterizes a performance's *naturalness*. For Repp (1992 b), the ability to detect temporal variations is a function of a schema of timing. He found that the average of a set of expressive performances of a same fragment gives rise to a *virtual* performance that listeners may approve as expressive. In generative terms it can be said that such an average constitutes a *grammatically acceptable statement.* Curiously, he found that listeners can better detect timing variations in locations in which the average performance displays lower variations. Thus, for example, at the end of a phrase, in which note lengthenings typically take place, listeners are less successful at detecting changes in timing. A first account would say that the listener *hopes* that a lengthening takes place at that point and it will therefore be more difficult for him to identify one that indeed happens. In that way, an *expressive schema* would operate in perception and action, constraining both listeners' expectations and performers' actions. This would be a basic schema from which performers decide their idiosyncratic expression (Repp 1998 a, b, c). The origin of this expressive schema is, however, arguable.

Two hypotheses have set out to explain both the existence and origin of this deviation threshold that characterizes the *naturalness* of a performance. Carolyn Drake (1993) proposed a *perceptual hypothesis*: this schema arises from restrictions proper to the perceptual system, and therefore, depends on the complexity of the musical structure attributes in interaction. Thus, some timing variations in performance are *naturally* associated with given structural configurations (Drake and Palmer 1993) (Figure 4.1). This hypothesis establishes that some lengthenings are due to the fact that the performer perceives certain inter-onset intervals (in such structural configurations) as shorter and *naturally* tends to compensate them. Such distortions would require a low level of processing and would operate on a structural surface level with a local range - as it is seen, in relations of few notes. As listeners and performers share the same perceptual system constraints and, therefore the same schemata, then the lengthening is not perceived as such and the sequence is interpreted “without lengthening”.

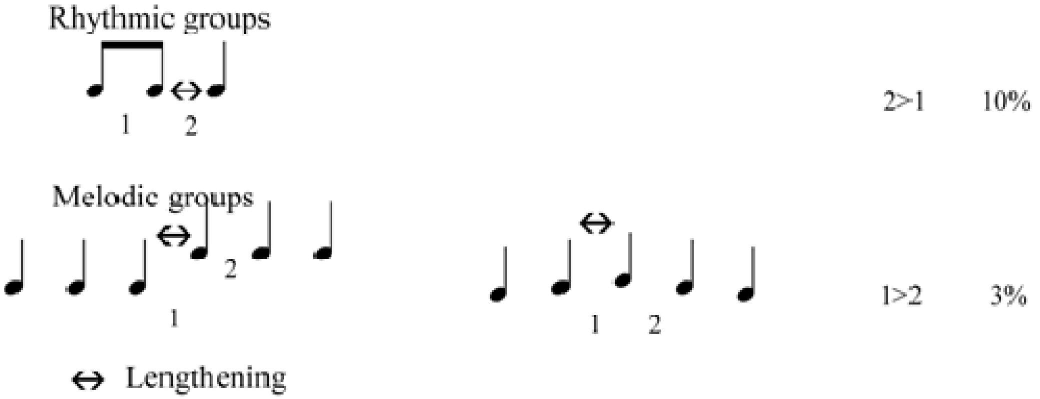

Figure 4.1. *Rhythmic and melodic timing variations in music performance according to Drake and Palmer (1993)*

On the contrary, Repp (1992b, 1995b), proposed an *expressive hypothesis*, not limited to such restrictions but fundamentally subordinated to cultural guidelines (incorporated by enculturation) concerning the expressive handling proper to each performance style. The use of such a schema would imply a high level process because both the performer and the listener would have to grasp all the information relative to the structural context in order to activate the schema.

Penel and Drake (1998) distinguished between low level processes of local grouping that lead to a non-intentional timing even in performances considered mechanical, and an additional high level of grouping processes that, under cognitive control, are only reflected in expressive intentional timing. Presumably only the obligatory low level perceptual processes would play a role when the task is to detect the deviations with respect to an isochronous pattern, and a high correlation would be expected between the perceptual biases and the typical timing profiles of performances with mechanical intentionality. This level is restricted by psychoacoustic phenomena - like that outlined in figure 4.1. Nevertheless, in performances considered as expressive, the deviations found are greater. Therefore, both types of processes - high level as well as low level ones – could be involved. Penel and Drake suggested that under the expressive conception of performance there are bottom-up processes that can be appreciated in mechanical performances. Nevertheless, due to the hierarchical and multilevel nature of certain musical structures, these psychological processes should take part in processing both high and low structural levels.

From the performance perspective, Repp (1998 c) suggested that although an involuntary level of timing variability can be due to local aural (and kinetic) aspects, such involuntary timing possibly has to do with a residual effect of structural perception that falls below our perceptual threshold and is therefore unconscious and involuntary. This residual timing would be typically related to the aural structures of music, while a more flexible (idiosyncratic and individual) genuine expressive pattern would be cognitively guided. The listener’s expectations come from their processing of musical structures (for example they recognize a phrase ending) in conjunction with their previous musical experience (they are used to hearing the tempo slow down at the end of a phrase). Such expectations are focused on musical structure and interact with the perception of musical time.

4.4 Dynamic systems

In turn, several authors have proposed explanations of some aspects of music performance as communicational processes, describing the process as a whole in terms of a set of equations that "*show how current values of variables depend mathematically on previous values of those variables*" (Tagard 1996; p.169). These sets of operations are generically denominated *dynamic systems.* Some analogies of such models with a multiplicity of processes that happen in natural sciences are particularly attractive. These models suppose that important reasons exist to think that information is understood as being matched to a pre-existing knowledge structure, in most of the cases granting some type of *physical* advantage. Many of these dynamic system models capture the intuition of *naturalness* as linked to certain expressive modalities. In particular, the domain of time in music seems to be strongly marked by our experience of space in our relationship with the world. Numerous studies exist that seek to explain this relationship between the physical world and the aesthetic-expressive worlds in terms of dynamic systems. According to this perspective, such systems should operate as a knowledge foundation on which the listeners' and musicians' responses to expressive aspects of performance are based.

Most of these models are based on empirical evidence gathered in the laboratory. One of the first attempts to characterize a performative feature mathematically was made by Sundberg and Verrillo in 1980. They analysed the typical pattern of performative deceleration at the ends of pieces in predominantly isochronous performances. They put forward an average function for a great number of performances characterized by the concurrence of two linear functions. Accordingly, listeners tended to prefer the performances that follow that principle. Interestingly, the proposed model was soon improved by Kronman and Sundberg (1987) with the sole use of a quadratic equation. These authors found a curve of *retardation* of certain physical movements generically denominated motorhythmical (for example, to run or to walk), and compared it with the average curve of *ritardandi* studied by Sundberg and Verrillo in 1980. In this way they initiated a systematisation of the musicians' and listeners' intuitions about the fact that musical movements have a counterpart in the physical world. They proposed certain associative foundations for processing expressive information, based on the similarity between the physical motion curve of retardation and the average curve of ritardandi, suggesting that the *ritardando* evokes some type of motional retardation for the listener that incorporates a certain expressive value to the performance.

The characterization of the spatial aspect of music shown through the multiple motion metaphors used to describe musical passages has been, since then, a search often described in terms of these *dynamic systems*. One of the more frequent concepts in the field of musicological studies on performance is that of the *musical gesture* (Repp 1994, Shove and Repp 1995). As indicated by Repp (1992a), this clear orientation towards the problem of performance is better than the simple *rhythmic group* problem since it reveals its psychomotor constraints. When studying the thematic rhythmic group at the beginning of Schumann's *Träumerei* and its elaborative derivations in a set of 28 expert performances, Repp (1992c) could observe that all the expressive patterns of this motif roughly adjusted to a parabolic function, more or less pronounced according to the location of such groupings in the course of the piece. Accordingly listeners considered rubato patterns corresponding to the found function as the most *acceptable* for this motif (Repp 1992a).

The *dynamic system* perspective captures a dynamical sense of music that grammars disregard because of their static nature (Kendall and Carterette 1990). In that way, expressivity in performance is viewed as a listener-directed message codification that is proper to the performer regardless of the composer's message. The musical composition is considered in this context as a frame *“for the dialogue between performer and listener"* (Kendall and Carterette 1990; p. 135). Thus, the imposition of the listener’s intention is an important component within the system. In this way, the listener affects the identity of the message beyond behaving as its mere *transmitter*.

The relations between the notion of prolongational structure and this *dynamic system* may be promising. It is well known that listeners prefer performances that follow the acceleration/deceleration rule and that such patterns also characterize many forms of physical and biological movements. In addition, language about music calls for some kind of spatial reference. Musical *motions* are isomorphic and imitate physical motion in space. In addition, there is some evidence that encourages us to think that, at least in our culture, music is sound that is manifested both in time and in space. Thus, many authors speak of music’s *kinetic properties* (Shove and Repp 1995; Clarke 2001). It is by virtue of this that music seems to stimulate both the perception and the induction of motion. Logically, this quality has lead to important models in terms of *dynamic systems* linked with dynamic physical models.

One of the most influential models in this field is that of Todd (1985, 1992). He proposed a kinetic approach to musical expression. According to this, music expression has its origin in simple motor actions and both the performance and perception of timing and dynamics are based on a sort of inner sense of movement. This internal sense of movement is located in the vestibular organs, which should allow tying movement with vibration (Todd 1993). Two types of movements should regulate expressive musical activity: (i) an inferred oscillatory movement with a rhythm at a constant tempo, a regular strong beat (associated to sinusoidal movement); (ii) a gestural movement (associated with rubato) that has a beginning, a point of maximum speed and an end. This internal movement is organized in a hierarchical way that corresponds to the way in which the grouping structure is organized in the performer's memory. Expressive timing consists of alternating phases of constant acceleration and deceleration, in which each cycle typically corresponds to a musical group or phrase. In this way timing consists of concave or convex segments with overlapping boundaries. At the same time, dynamics also model expressive phrasing. According to Todd (1995) the relation between tempo and dynamic can roughly be defined by the formula: *"The faster the louder, the slower the softer"* in absence of other considerations.

Friberg and Sundberg (1999) proposed that the changes in tempo allude to locomotional patterns. They adjusted the abovementioned mathematical ritardando model to observations of runners' deceleration. They could observe that: (i) the frequency of steps when decelerating did not decrease, and it was therefore not possible to use the steps' frequency to elaborate a mathematical model for ritardandi; (ii) the length of the steps became progressively smaller (which therefore varies the instantaneous speed – the speed between steps); (iii) the speed showed a high correlation with the patterns of ritardandi analysed by Sundberg and Verillo (1981); (iv) speed does not decrease in a linear fashion; (v) the square of the speed, that is to say, the kinetic energy, presents a rectilinear pattern. In other words ritardandi were associated with the decrease of runners' kinetic energy. Thus, runners as well as musicians *decelerate*, showing a comparable pattern of the handling of energy. This similar energy handling would indicate that the metaphor of movement in music could have an origin which is psychogenetically related to certain habitual human motions. Although the model seemed to predict the piece's final ending better than any intermediate ending, it gave rise to speculations about the fact that the simplicity of the relation between energy and deceleration is presumably the base of the "naturalness" of certain forms of ritardandi.

The model offered a satisfactory explanation of the fact that listeners can anticipate the moment at which the final note appears in the musical piece. Nevertheless, it seems to adjust better certain musical styles. This fact accounts for an important limitation of the *dynamic systems* as part of the *generative paradigm,* namely: they are not able to account for the culturally specific characteristics of performance; this includes both the characteristics of the performance style, as well as the conditions of admissibility of the particular performances within a specific musical culture.

These models encourage the study of other metaphors used in relation to music that allude to physical principles, such as inertia (vf. Appendix I *Prolongation and voice leading*). In addition, if, as we have just speculated, the metaphor of temporal movement is not in its origin a mere rhetorical resource, it could be that the metaphor of tonal movement is not rhetorical either, and that therefore the principles of inertia, magnetism, etc. (as Larson 1997 proposed) would not be simple metaphorical statements. They may at least have a *quasi physical* foundation. In a similar way Feldman, Epstein and Richards (1992) proposed a mathematical model for the tempo change (*ritardando* in particular) in performance. The model could predict temporal variations in orchestral performances. From their findings, they speculated on a sort a *quasi-physical* musical knowledge that, unconsciously shared by musicians, supports the metaphors of motion used in the speech about music. In that way, although the forces that regulate the aesthetic phenomena of music performance are psychological, they are nonetheless governed by constraints *as if they were physical*.

4.5 Partially redundant, probabilistic systems

Both rule systems and the other forms of knowledge integration appear as convincing in explaining the communication of structural musical features described in the terms of music theory. As we have seen (chapter 2) this is the *intended* content for objectivism. Nevertheless, when considering other contents, the idea of a linear, one way communication seems insufficient. Such is the case in the communication of emotions. Concerned with describing emotional communication (related to both perceived and induced emotions) in music performance, Juslin (1997, 1998, 2005) developed a model that attempts to abandon the epistemological corset that the chain of linear communicational strictly imposes. He argued that it is not possible to speak of a one way linear relation between a given performative attribute and a determined emotional content. On the contrary, similar traits can contribute to communicate different emotional contents. Each characteristic of music performance is a condition neither necessary nor sufficient to guarantee the communication, but the great number of intervening features and the fact that those traits are redundant with respect to their possible effects assures a high probability that communication takes place. Thus, Juslin affirms that the relation between the performative characteristics described by the model and the provoked emotions is a *probabilistic* one and that therefore communication is better thought of as correlational rather than as deterministic.

These ideas are the basis of the Lens Model (Juslin 1998). Basically, the model is a *functionalist* one, describing the communicative process in terms of functional relations between performers, performances, and listeners. The performer can communicate symbolic representations of emotions to listeners, making use of expressive characteristics in performance. In this way the performance acquires the essential symbolic function of making somebody think about something absent that is being symbolized. The model classically includes a sender, a channel and a receiver. But here, the performer, who acts as sender, produces a series of actions that act as indicators of what she or he is trying to communicate. These indicators constitute continuous signals whose function is probabilistic. The receiver gathers a great number of indications from the environment, which is particularly uncertain, since there is no code of invariant communication: no invariant relation exists between the cue and the intended message by the performer. That is to say, the cues that arise from the environment are not completely dependent, but hold only a probabilistic relation (which is uncertain) with the performer's actions. According to Juslin, communication is achieved because a substantial number of cues exist that are partially interchangeable and redundant. Thus, the environment offers cues to the listener that are not the message in itself but that are representative of that message, and as a response to this, the receiver acts as an intuitive statistician, assessing and combining cues, changing from those that are not available to those that are. This is due to the cues constituting a *noisy communication channel*, and therefore the receiver must separate the relevant input aspects (reliable aspects) from the rest of the noise (non reliable aspects). Here the subject *is the person who must* evaluate the relevant information. This perspective remarkably approaches the very concept of *interpretation* as heuristic, as opposed to algorithmic, process (Eco 1990). The model permits an evaluation of the adjustment between the performer's intention and the listener's comprehension, and the effectiveness of the used strategies. Besides, the model can account for central tendencies at the same time as performers' individual behaviours.

All the approaches reviewed here consider communication as a one way process, whose understanding depends on the way in which information can be organized in the mind (as rules, as a scheme, a dynamic system, etc.) or may be *processed statistically*. In this way: "*Communication (…) requires that there is both a composer's (or performer's)* intention *to* express *a specific concept and* recognition *of the same concept by a listener"* (Juslin 2005,

p. 88). This is, in essence, the way in which communication is understood from the objectivist perspective. How may this perspective contribute to undertake the problem of communicating prolongational structure? The final section of this chapter presents some advances in answering this question.

4.6 The role of performance in the communication of the prolongational structure

There are some studies that could be considered as precursors in considering the prolongational structure as a possible communication content in performance, and as such they are direct antecedents of the studies will be presented in chapters 5 and 6.

Cook (1987c) made an empirical study from the detailed analysis of two performances of J. S. Bach’s *Praeludium* in C Major (WTC 1). His aim was to investigate possible correspondences between the expressive organization of *timing* and the prolongational structure of the piece, with a clear objectivist orientation since, early in the study Cook affirms “*There should be a close relationship between the analysis of music and its performance*” (p. 257) (although later Cook (1999) re-examined this assertion, affirming that it is necessary to re-define the nature of such a relationship). From this perspective, some of Cook’s findings are relevant for our studies. Firstly Cook acknowledged that certain expressive resources, for example the lengthening of a note, can fulfil different objectives, when looking for a convincing way to enunciate them as rules. Thus, for example, he affirmed that a downbeat lengthening emphasizes the corresponding *fall to earth,* whereas the upbeat lengthening emphasizes the following note. In this way, he is making evident a preoccupation for the contextual understanding of the performer’s actions. Therefore, for example, it is possible to interpret performance differences of parallel passages from a contextual interpretation of such passages as fulfilling different *functions* in the whole. Secondly he speculates about the prolongational structure as being responsible for the organization of the piece's segmentation (an idea that emerges more clearly from the *GTTM* notion of *prolongational regions* than from the Schenkerian notion of *background as musical form generator*). Thus, tying this idea with the Todd's hypothesis (1985), he predicts possible *ritardandi* according to the hierarchy of the prolongational regions. In such a sense, this idea of linking an expressive effect, originally conceived in terms of the grouping structure, to the prolongational structure, is only possible if we bear in mind the *GTTM* notion of prolongational structure, which derives from splitting the composition up into discrete units (see Appendix I and Chapter 3).

Starting off just from the idea that certain expressive deviations locally emphasize certain notes, Shifres and Martinez (2000b) studied the role of performance in the cognitive reality of the hierarchical structure. For it they began from the Serafine, Glassman and Overbeeke (1989) experiments (see Appendix II), taking expressive features as variables. They took one of the examples used in those experiments, the Bourrée from the J. S. Bach Suite for cello solo in C Major (bars 1-4, figure 4.2). The melody is a *compound melody* in which the rhythmic motifs belong to different *voices* according to their tessitura. Figure 4.2.b shows the *voice leading* reduction proposed by Serafine and her colleagues. They ignored the expressive component of the stimulus, and made use of artificial synthesis for the examples. Shifres and Martinez (2000b), on the other hand, took 6 well known recordings of the piece (PC, PF, MG, MR, PT, YM) representing diverse performative traditions. From these recordings they analysed the timings of each performance, measuring the 22 inter-onset-intervals (IOI) in milliseconds.

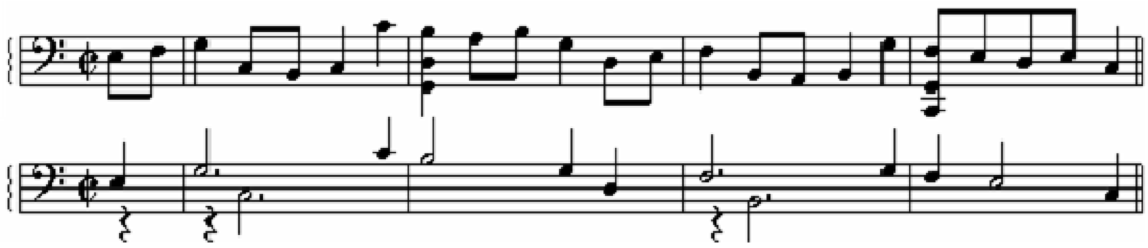

Figure 4.2. *Bourrée from the J. S. Bach Cello Solo Suite in C Major (bars 1-4, upper system) and foreground reduction (lower system)according to Serafine et al (1989)*

From these they graphically displayed the respective *timing profiles*. Figure 4.3 shows the graphic analysis of *timing profiles*. Panel *a* shows the average for the 6 performances. Motifs corresponding to the inner voice tend to be played faster. Thus, tempo would serve to identify the motifs as part of a certain voice. Thus, *slower* would be a way to emphasize the main voice.

Shifres and Martinez analysed differences between the performances by carrying out a factor analysis among the 6 performances that resulted in two Principal Components (Factor I and Factor II in panels b, c and d of figure 4.3). These principal components can be considered as abstractions of two different timing strategies. In this way they could identify 3 key differences between both strategies (Factor I and Factor II) that were denominated *strategy's properties.* Property A is in bar 3's *upbeat*. In this location Factor I emphasizes the e^3-f^3 relation, highlighting the e^3 as *upbeat* of the f^3. Factor II emphasizes the d^3-f^3 relation, highlighting the d^3 as an *upbeat* of the f^3. Property B is found on the *upbeat* to bar 2. Factor I emphasizes the upbeat's c^4, whereas Factor II emphasizes the b^3 of the downbeat shortening the following beat's a^3. Property C is on the final motif. Factor I emphasizes the last e^3 before the final tonic, whereas Factor II emphasizes the d^3 before the final tonic. This way, the melodic component of the final cadence is e^3-c^3 for Factor I and d^3-c^3 for Factor II.

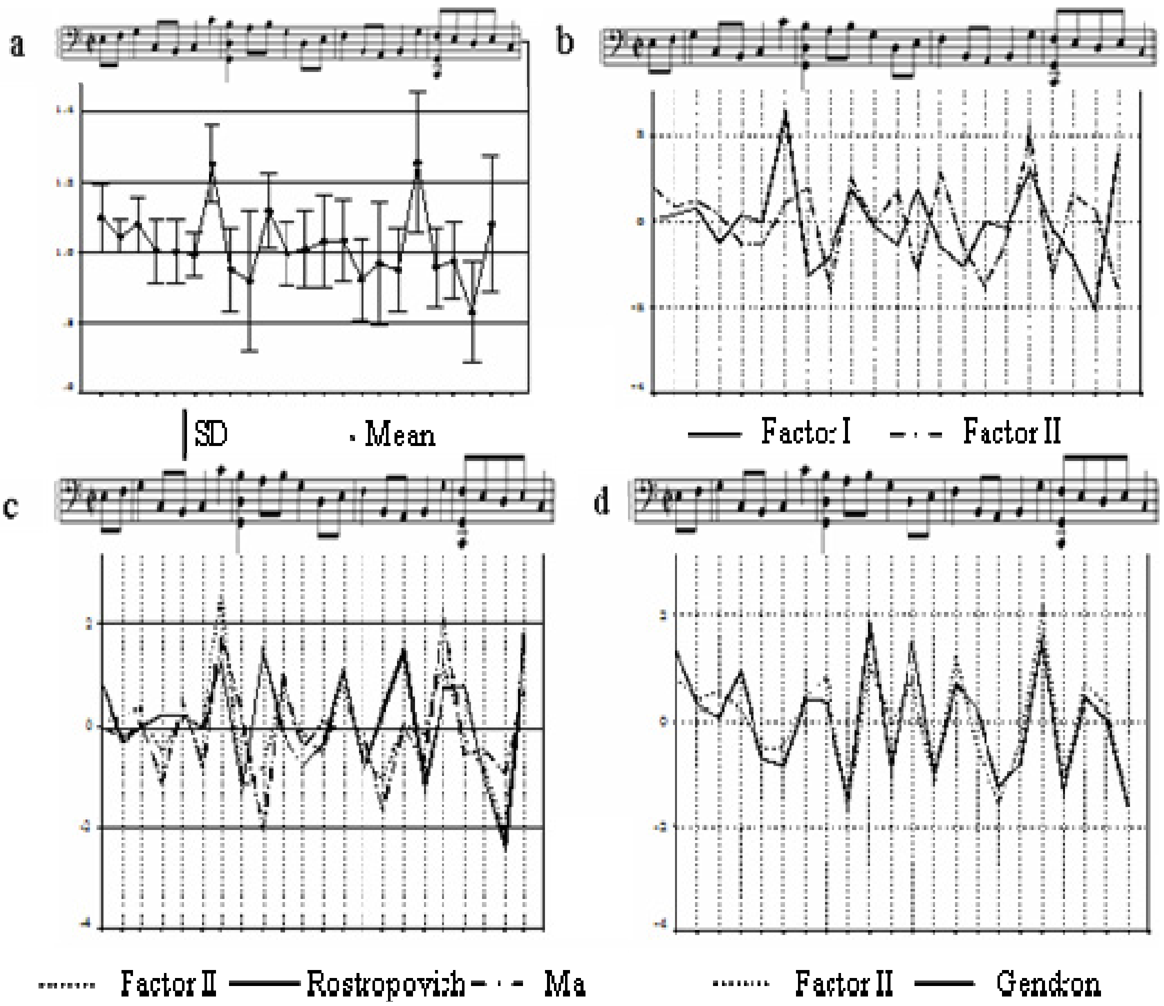

Figure 4.3. *Average timing profile (panel a).Principal components timing profiles (panel b), MR and YM performances (Panel c) and MG performance (panel d). See explanation in the text.*

Finally, they analysed the individual performances, since they were more representative of these properties. They thereby determined that the MG performance was the most closely associated to Factor II. Regarding FI, analysing properties A, B and C, researchers observed that MR exaggerated Property A (as assigned to FI as opposed to FII emphasizing property A) and adjusted to FI as regards properties B and C (figure 4.3c). Thus, they considered MR as *an exaggerated* exponent of FI. Contrarily, YM, while highly associated to FI, adjusted to FII concerning to property A, whereas he behaved almost neutrally in regard to properties B and C. In this way, YM could be qualified as an FI exponent with a tendency to approach (exactly regarding properties A, B and C) Factor II.

Using these performances as stimuli, Shifres and Martinez carried out a listening test following the paradigm used by Serafine *et al.* (1989). In it, subjects had to judge the goodness of fit between the musical fragment and its *voice leading* reduction. For that objective, four reductions were composed, one *Original* (taken from Serafine *et al.* Figure 4.2b) and 3 foils. Every foil was composed by modifying a note of the true reduction according to the differences observed in the properties A, B and C (figure 4.4). Therefore, foil A added the a^3 that characterized to property A, foil B replaced the d^3 by e^3 in measure 2, as it appeared in property B; and finally, foil C replaced the e^3 before the final tonic with a d^3, as it was announced by property C.

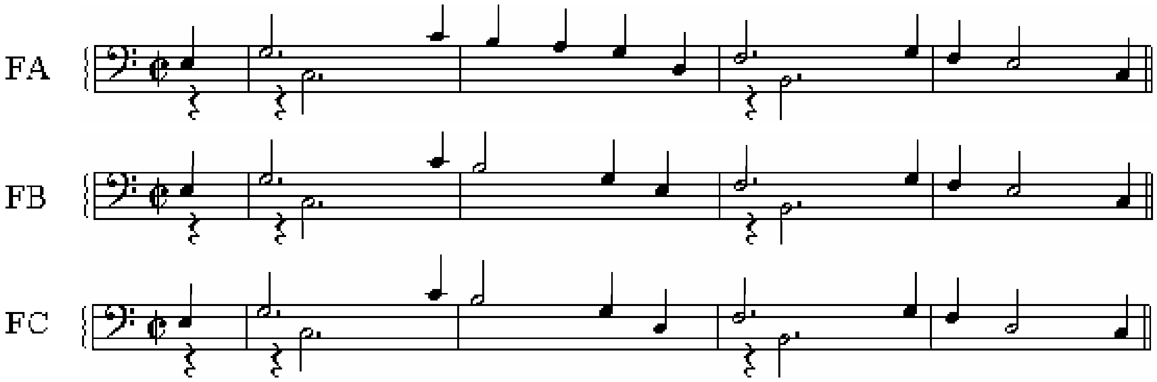

Figure 4.4. *Foil reductions used in the listening test (Shifres and Martínez 2000b)*

Subjects have to listen to the original melody performed by MG, MR and YM followed by two reductions, the original reduction and one of the foils. Thus, the authors predicted that: (i) when listening to the original/FA pair, subjects would prefer (matching higher) the original for MG and YM, and the FA for MR; (ii) when listening to the Original/FB pair, subjects would match higher Original for MG, FB for MR and an intermediate value for YM; and (iii) when listening to the Original/FC pair, subjects would prefer the original for MR and MA (less so) and the FC for MG.

Some of Shifres and Martínez's most important findings were that: (i) FA and FB tended to be judged as better reductions more for the MR pair than for the MG pair, as it had been predicted. In other terms, MR’s performance is better reduced by the FA and the FB than by the original one. Also, FA and FB better reduced the MR performance than the MG one; (ii) YM did not present significant differences with MG. This revealed that although the YM’s performance displayed a timing profile more similar to Factor I, the timing similarities with FII as regard to properties A, B and C could be communicated to the listeners; (iii) property B is the one that adjusted most to the prediction: listeners preferred the original one for the MG’s performance, the FB for the MR’s one and doubted between both for the YM’s one; (iv) composition of the foil reductions were extremely important in order to appreciate the scope of the conclusions. The foil composed by Serafine for this melody included two different notes that were not part of the local context

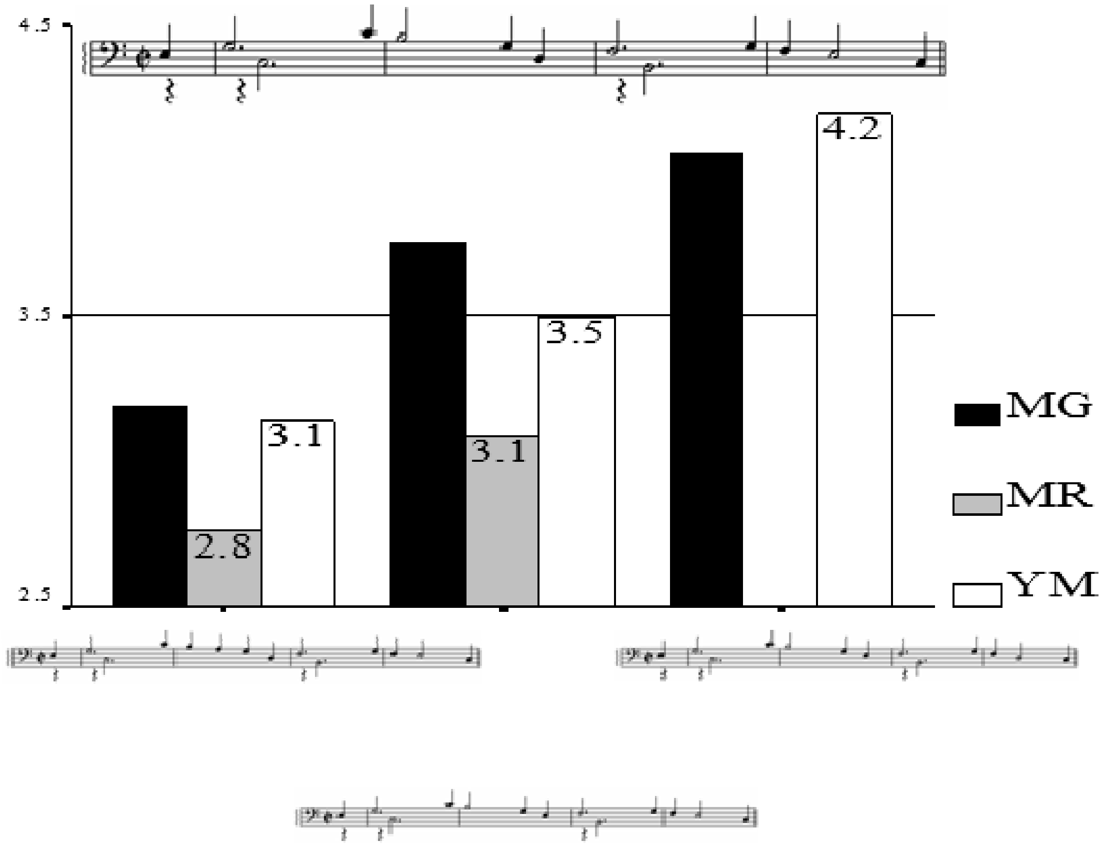

Figure 4.5. *Results of the listening test. Below, each Foil Reduction. See explanation in the text.*

(of the piece). Possibly, using other foils, composed utilizing notes belonging to the local context, the results would have been different.

As listeners tended to match more strongly the option that displayed a more superficial level of reduction (FC), the authors concluded that this fact could reveal that the reductive process (as a cognitive process, Serafine 1988) is not automatic, but requires certain *activation*. When such activation does not take place spontaneously, the listener remains at a more superficial level and in that case, the role of the performance as *activator* of the reductive process would be relevant.

As a direct antecedent of the experiments presented in this thesis (chapters V and VI) the work of Shifres and Martinez showed the need to reconsider the findings of the studies on the hearing of prolongational structures, in the light of the microstructural components of the performance.

***

Summary. Communication in music performance has been approached by classic cognitive science through the *generative paradigm*, as it was named here. This denomination refers to the *generative-interpretative* dichotomy in the field of semiotic studies. According to this paradigm, the information entering the perceptual field (both for performers and listeners) is processed in terms of more integrated informational structures lodged in the mind, usually acquired by enculturation. According to different approaches, those structures may adopt diverse computational formats (rule systems, schemata, dynamic systems, probabilistic systems, etc.). The psychology of music has given rise to considerable evidence supporting this paradigm. It is particularly appealing because it allows relating the performer’s actions to the descriptions of the musical structure provided by music theory (as seen in chapter 2, a strong urge of the objectivist approach to performance). Thus, the communication of structural attributes can be undertaken. Many structural attributes can be explored in such a way: metre, texture, phrasing (grouping structure), etc. Although pitch structure has received less attention, certain empirical evidence holds that performance affects the perceived distance between keys throughout a modulatory process. Some studies on the communication of the prolongational structure also account for the importance of considering the performance's attributes (timing in particular). The studies presented in chapters 5 and 6 follow this line.

Chapter 5: First empirical approach: a performance study

5.1 General issues

We have seen that prolongational theories have presented a sort epistemological affinity with some performative problems. We have also indicated that the relation between musicology and psychology in the course of music performance has changed according to the dominant paradigms in both disciplines throughout time. As the problem of communication in performance has been considered here, our focus is on the question of whether the prolongational structure described in Schenkerian terms can, indeed, contribute to performance details and that being the case, whether that contribution is in some way communicated to the listener.

Since the generative paradigm, as was reviewed in the previous chapter, dominates performance studies, in order to advance on that objective, it is necessary firstly to analyse the existence of some type of *generative relation* between musical structure and performance organization. The first empirical undertaking in this thesis was directed towards this end. In a wide sense, the aim of this exploratory study – in the epistemological line of Schmalfeldt (1985), Rothstein (1995) and Shaffer (1995) (who speculated about the interpretational consequences of the structural analysis) and methodologically following Cook (1987c) – is to find links between the prolongational analysis of a composition and the objective descriptions of a set of performances of that composition with the intention of enunciating them in the form of rules or grammars. As it was seen (p. 111 and ff.) precursor studies did not undertake the topic of performance of prolongational structure as *form generator* (as it is seen by the Schenkerian theory). Cook (1987c) studied that topic taking prolongational structure based on grouping structure (as in *GTTM*), whereas Shifres and Martínez (2000) focused on textural consequences (saliences) of microtiming in certain notes linked to foreground reductions.

In order to accomplish the objective in the context of a complete piece it is assumed that a set of microstructural performance characteristics - in particular *rubato* (timing) and dynamics, the more common microstructural characteristics shared by most means of performance - can be put into action by the performer with the intention of generating particular situations of: (i) discursive continuity; (ii) unity, cohesion and coherence between points far apart on the musical surface; (iii) salience of particularly *hidden* notes in the texture that could be associated to underlying linear organizations. From a methodological point of view, the key point consists in that these particular situations may find a more parsimonious explanation and foundation in the analysis of *underlying voice leading* than in any other structural surface characteristics. Thus, it is possible to enunciate an initial hypothesis, namely:

> *"It is possible to categorize a music performance either as* Prolongational *or* Non Prolongational *according to how the arrangement of certain components of its microstructure (timing, dynamic, etc.), measured objectively, may be associated to explanations of the musical structure based on prolongational structural components or surface components of the musical piece respectively."*

In such a sense we understand that a *prolongational* performance will involve "the act of (performing) a piece of music as containing a prolongation" (paraphrasing Larson 1997; p.115). In other words, a *prolongational performance* is one that it is supposed to convey the prolongational structure of the piece. On the other hand, a *non-prolongational performance* is a performance that does not give rise to a convincing account based on the prolongational analysis of the composition. In order to guarantee that the "*convincing*" judgment will not be arbitrary, both prolongational and non prolongational accounts should give rise to enough different microstructural configurations. In other words, the role that the prolongational structure may be playing in certain performances might only be identified in certain particular cases, in which the surface-depth relation generates contradictory configurations. In particular, it could be useful to explore those cases in which the musical surface presents discontinuities, absent in a deeper level. In that way, the depth may *unite* the composition, as Cook says "*bind(ing) the sections into a coherent whole"* (Cook, 1987a, p. 48)

In the next chapter, a second stage of this study will be described, in which the interest focused on the problem of communication between performers and listeners. The role that *Prolongational performance* can play in the listener's experience was investigated, as opposed to the role of a *Non Prolongational* one. From the perspective of the classical cognitive paradigm, that role could be related to the field of the representations that take place on the part of the listener during the musical experience. As will be seen when explaining the experiments, the a priori premise was to estimate that those representations could refer to very diverse contents: time, emotions and motion representations amongst others. A second hypothesis, this time related to the performer-listener communication, was then formulated:

> *"It is possible to describe either rules or principles that regulate communication between performer and listener, by means of which the latter is able to discriminate prolongational from non prolongational performances by making use of different types of representations."*

As seen in chapter 3 (pp. 77 and ff.), the theoretical bonds between music performance and prolongational structure would appear to take place at levels of relative interpretative sophistication. For that reason it is possible to hope that the aspects that are being investigated here arise clearly in the context of accomplished interpretations presenting a high degree of idiosyncratic detail and therefore *originality* and *individuality*, two conspicuous characteristics sought by contemporary performers (as we have seen in pp. 42 and ff.). In general, performances made by famous artists in recordings for important record companies, guarantee both that refinement and that intention of originality and individuality. A priori this methodology would seem to contradict the essence of the classical cognitive paradigm that tries to explain common behaviours more than particular performances. Nevertheless, it is possible to find good reasons in order to justify the study of highly idiosyncratic performances in the search of expressive characteristics that can systematically be enunciated as performative rules or grammars. Firstly, Repp (1992c, 1998d, 1999a, 1999b) demonstrated in a series of detailed, elegant and deeply aesthetic studies that it is possible to identify common features even in sets of deeply personal performances. This could be considered as empirical evidence on an issue on which both musicologists and performers have reflected since long ago: *individuality* in performance is not capricious, but emerges from the tensions among *intentio operis, intentio auctoris,* and *intentio lectoris* proper for any interpretative act (Eco 1990). Although individuality appears to see the triumph of *intentio lectoris* (interpreter's intention), we will try to demonstrate here that its imposition is the result of the co-performance of all those forces. From an objectivist perspective we can say that the balance between these forces takes place within a *canon* (as a set of constrains that regulates the performance activity; see description in chapter 2, p. 23-24). The allegiance to the canon appears to be the fact that allows valuing a performance as *idiosyncratic* but *admissible.* Nevertheless, from chapter 7 we will propose an alternative interpretation for the way in which those forces interact in current performance.

An epistemic community – understood as a group of people who share norms, epistemological, methodological and ethical values, metaphysical assumptions, etc., which constitute conditions of possibility for both knowledge and experience (Martínez 2002) – constructs its own concept of *acceptable* interpretations in a social way. The record industry (including the good name that artists build thorough their career in a given musical circle), is used here, from this perspective, as a measure of reliability of both *individual* and *acceptable* quality of each performance.

However, it entailed a series of methodological difficulties. The first is related to the lack of certainty of the *intentio lectoris* (the performer's intention). Due to working with commercially recorded versions we could not operate on this variable. We could only hypothesize about that intention. Undoubtedly, this limitation weakens the evidence's strength. Two reasons moved us to work in that way. Firstly, the method shows important advantages related to gaining better ecological conditions. Thus, we had the opportunity to examine extremely high level performances. These kinds of performances insert the problem of *individuality* and *originality,* beyond the standard expressive attributes. This will be a crucial point in our final discussion (chapter 11) concerning creativity in the act of sophisticated performance. Secondly, although the problem of the sender's intention seems to be a central issue for classical communication approaches, these approaches are being nowadays criticized in the light of new psychological, semiotic and social perspectives. Related to this, musicology has provided an important contribution from its discussion about musical analysis and the composer's intention. Dunsby (1995) wrote:

> *“In my experience of taking bright students through their music analysis classes (…) I have been confronted countless times by one question: ‘Did the composer know about this?’ It takes a long time to put all the facts in a particular case that may persuade the student both that the composer did not know, and, however, that this is not relevant, that what matters is that we ourselves know”* (p. 49).

Why do we have to think that performers are always conscious of what they are, *in fact*, communicating? Communication, as is approached by cognitive science, is not thought without considering the (in general, conscious) intention of what is communicated. For this reason, in these experiments we will be extremely careful about *attributing* an intention behind a set of performance features. We will talk about *association* between a set of performance features and a set of structural, analytical accounts. In chapters 8, 10 and 11 we will discuss other psychological perspectives that understand communication beyond the sender’s intention.

5.2 Aims

This performance study had a double objective: (i) to verify the first hypothesis (see p. 120 above); and (ii) to analyse bonds between the prolongational structure of the musical piece and the performance’s microstructural characteristics, enunciating them in generative terms. Also, the attainment of these objectives will allow locating the performances susceptible to be understood as *prolongational* and *non prolongational*, in order to serve as stimuli in the listening experiments described in the next chapter.

5.3 Method

In order to hypothesize whether a performance can be considered as *Prolongational* or *Non-Prolongational*, it should be necessary to work with a piece that can hold the possibility of different convincing performances. In addition those performances should be different enough and it should be reasonably feasible to attribute those differences to either some surface components, or the prolongational component. In other words, the piece should bring up a performance dilemma, forcing the performers to take strong performance decisions. The underlying assumption is that if the performer takes a given interpretative decision (X) it is revealing that he or she is favouring a *Prolongational Performance*, whereas if he or she takes another decision (Y), he or she is favouring a *Non-prolongational Performance* of the piece.

At the same time, it was possible to hope that these performer's interventions were tied to refining performance aspects such as the issues of continuity and unity (p.78).

5.3.1 The piece

The selected piece was Chopin's Piano *Prelude Op 28 N° 6 in B minor*. Its place in the piano repertoire shows some advantages for this study. Firstly, the analysis of the sound signal is simpler because of the clearness of the piano onset. In that way onsets can be clearly observed on the graph displayed by the computer, which is, as we will see, the starting point for the micro structural analysis. Moreover, the piano repertoire requires a single performer, thus it is restricting interpretative tensions without diminishing its structural complexity, which give account of the co-occurrence of harmonic, contrapuntal, textural, melodic components, among others. Romantic short pieces have a noticeable advantage: they cover a limited time span conserving all of the particular features of a complete, more extended work. Thus it is possible to study in a range of a few seconds both every part and the whole. In addition the selected piece is well known enough, so it gave rise to numerous interpretations both in analytical and performative ways. However, it does not belong to the most famous group of this kind of pieces. In that way it is possible

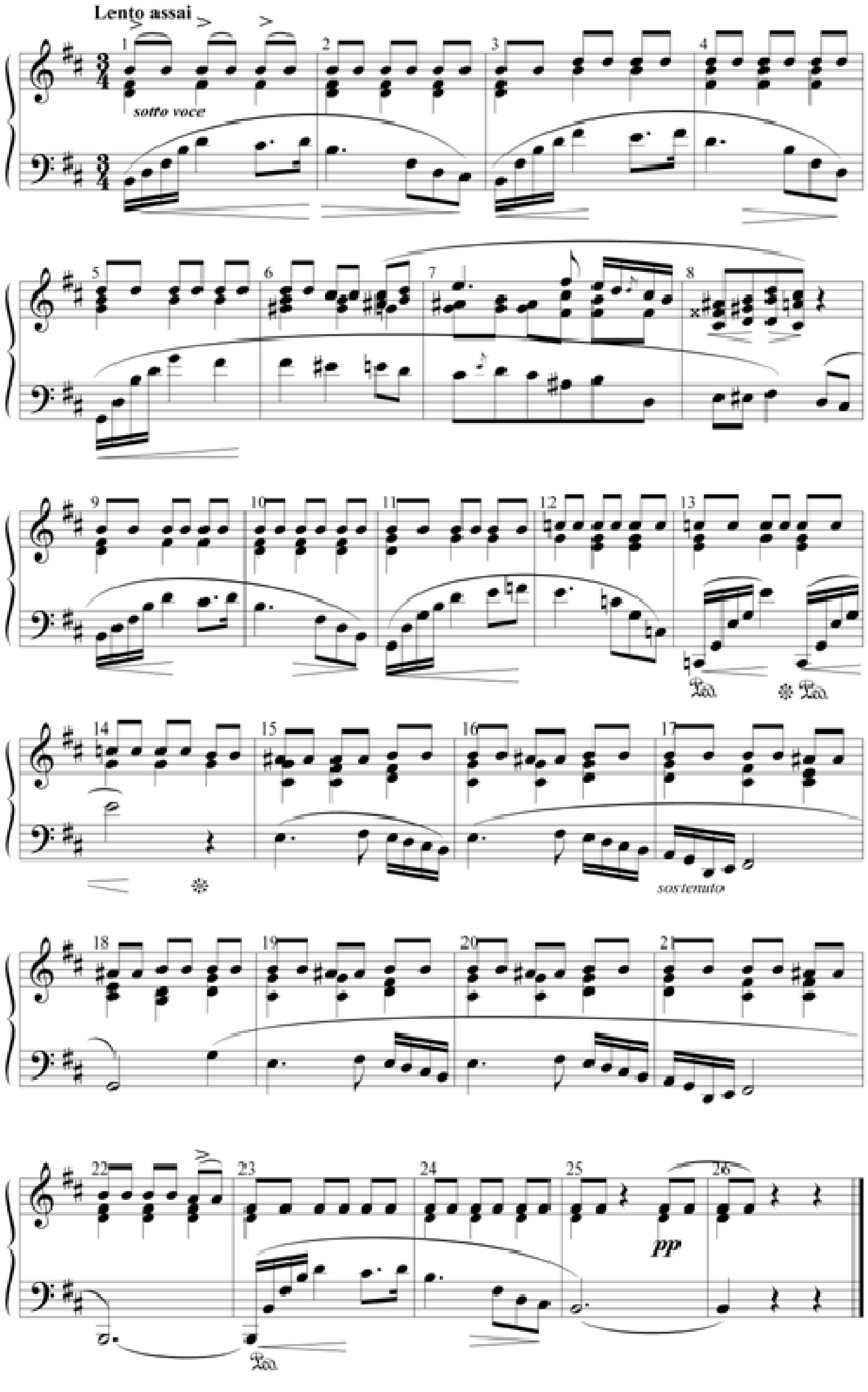
Lento assai
sotto voce
pp
sostenuto

Figure 5.1 *Chopin Prelude Op 28 N^{0}6 in B minor*

that many listeners do not know it (or at least they are not able to identify it), permitting *naive* listening studies. Furthermore, this piece has not been the object of *stylised* versions, pop versions, etc. (as *Preludes Op. 28 N° 4* and *20*, were) which can interfere in the studies to be done.

More importantly, the piece accepts multiple readings, which can refer to typical surface features or particularities of its prolongational structure. Figure 5.1 shows the score of the Prelude.

According to Charles Burkhart (1973) this piece constitutes a very strange case in the piano repertoire in that the main melody falls mainly to the left hand, in the low register. The lower voice represents one polyphonic melodic line. Thus, the accompaniment, realized by the right hand, does not play the bass voice (which habitually falls to that component of the texture). As a result of this, the voices that from the Schenkerian perspective are considered fundamental (*bass* and *soprano*) are both in a lower register than the accompaniment itself. From the compositional point of view this constitutes a challenge: "*... the composer must give the impression that the hands' roles have been exchanged, but achieve this impression within a tonal system whose outer-voice functions cannot actually be exchanged*." (Burkhart 1973; p.80)

The key of B minor is installed early in the prelude with the descent d ^{4}- c#^{4} - b^3 at bar 1[1]. This is one of the most interesting traits of the piece and one that also inaugurates the ambiguity between the surface and voice leading components: "*I do not denigrate the (...) sixteenth notes of the first beat – on the contrary, I find this upward arpeggiation on a strong beat to a climax on a weak a most striking motivic idea – but pass over them because of their minimal voice leading role*." (Burkhart 1973; p. 80). This ambiguity has to do then with the down or up-beat character of the beginning. The attention to the component of voice leading is associated with an interpretation of this melodic gesture as down-beat, while the attention to the split of the melody at the surface level ties it to an up-beat gesture.

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[1] Registral designation system, see footnote on page 54.

From the Schenkerian perspective the most important characteristic of the piece involves the composition as a whole. It is possible to assign the prelude to the category of *interrupted form.* The *interrupted form*

> *“(i)llustrates a harmonic and melodic process that begins from* $\hat{3}$ *over I and continues to* $\hat{2}$ *over V, where the tonal motion ceases. At this point the processes are interrupted, resulting in a divided structure. Immediately, thereafter, the same motions begin again and this time achieve the goal,* $\hat{1}$ *over I, that was expected but denied in the first motion.*
>
> *“It is important to stress that the sense of completion is fulfilled only after the structure begins again, that is, after the second phrase retraces its path from* $\hat{3}$ *over I, moves through* $\hat{2}$ *over V, and this time attains the* $\hat{1}$ *over I that is the goal of an Urlinie and bass arpeggiation. In short, the second part of an interrupted structure resolves the tensions created by the interruption of the first part.*
>
> *This procedure, called interruption, plays a significant role in shaping tonal structures, and appears in different guises and over various spans of music.”*
>
> (Cadwallader and Gagné 1998; p. 167)

This is a structural descending line – a linear progression - from the initial d^4 – which is prolonged thorough the first eight bars and a transfer of register in order to achieve the c#^{4} of bar 8 (figure 5.2 shows Burkhart’s voice leading graphic analysis). This linear progression is supported by the structural harmony I – (I $_6$) - V $_{(5/3)}$. A neighbour note e (with a melodic roundabout f^4#- g^4 - e^4#-) at a deeper level constitutes the structural

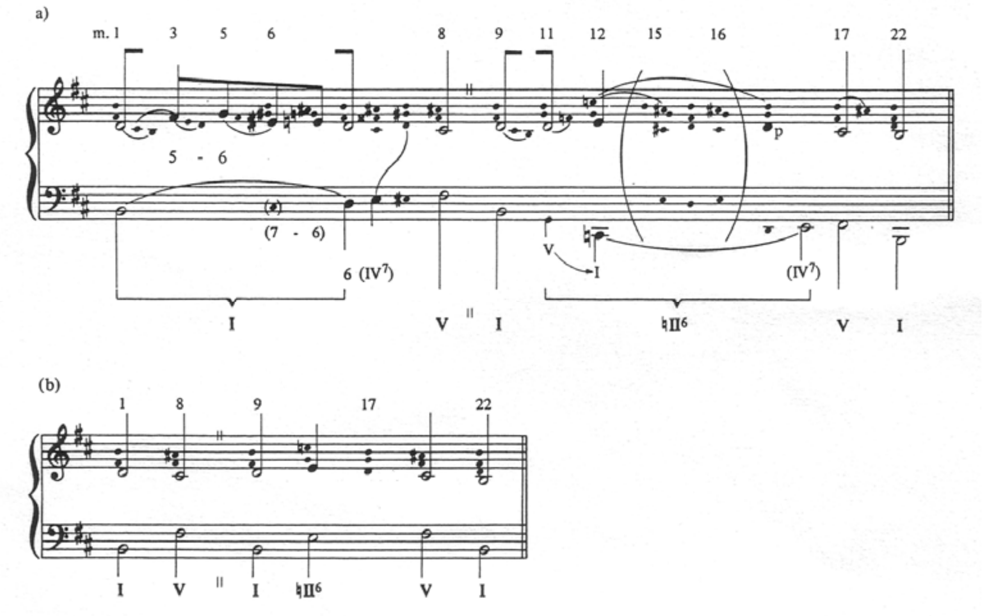


Figure 5.2. *Voice leading graphic analysis of the Chopin's Prelude in B minor. (from Burkhart 1973, p. 86)*

framework, which shapes the prolongation. The neighbour note will appear thorough the complete piece exhibiting thematic implications. In this way, we have two important thematic elements operating at different levels (both at the surface and at deeper levels): (i) the descending third; and (ii) the neighbouring tone– which often appears as an incomplete neighbouring tone. Thus, both motivic elements can be considered as inter and intra level cohesion factors. In addition, the neighbouring tone organizes the linear unfolding of every level of the texture (for example, note the melodic contour of the accompaniment voices played by the right hand from bar 15). The transfer of register emphasizes the particular status of the e^5 of bar 7 as a neighbouring tone. This e^5 is listened to as being supported by a c^4, which comes from a voice interchange at bars 6 and 7 (through which the transfer of register is done). This inner voice note, c^4, progresses to b^3, giving rise to a parallel motion with the upper voice (e^5-d^5). This parallelism highlights the first two thirds of a hemiola between bars 7 and 8 (see figure 5.3). Meanwhile, the bass, which had shown such an extended prolongation of the b^2 (as the root of I), progresses to the d^3 before the final f^3, at bar 8 (as the root of V, completing the arpeggiation of the tonic triad). Briefly, the prolongation of initial $\hat{3}$/I is achieved through a neighbouring tone d–e–d, which is partially supported by the arpeggiation of the b minor triad (b–d in the bass) and partially held up by a parallel progression of an inner voice (c – along with which the e^5 of the upper voice is simultaneously heard – b).

Another point arises here from extreme ambiguity: the attention to the underlying voice leading approach will lead us to the interruption after the second beat, when the upper voice reaches $\hat{2}$. Thus, the last two quavers of bar 8 (d^3- c#^{3}) would therefore not be interpreted as an *echo* of the d^5- c#^{5} of the two previous quavers (in octaves with d^4- c#^{4}), but as an anticipation (upbeat) of the following motif at bar 9 re-exposing the earlier d^4- c#^{4}- b^4. The cut point between both units, the upbeat character of the two final quavers of bar 8 as *falling* towards the first beat of bar 9 (downbeat), appear as key aspects associated

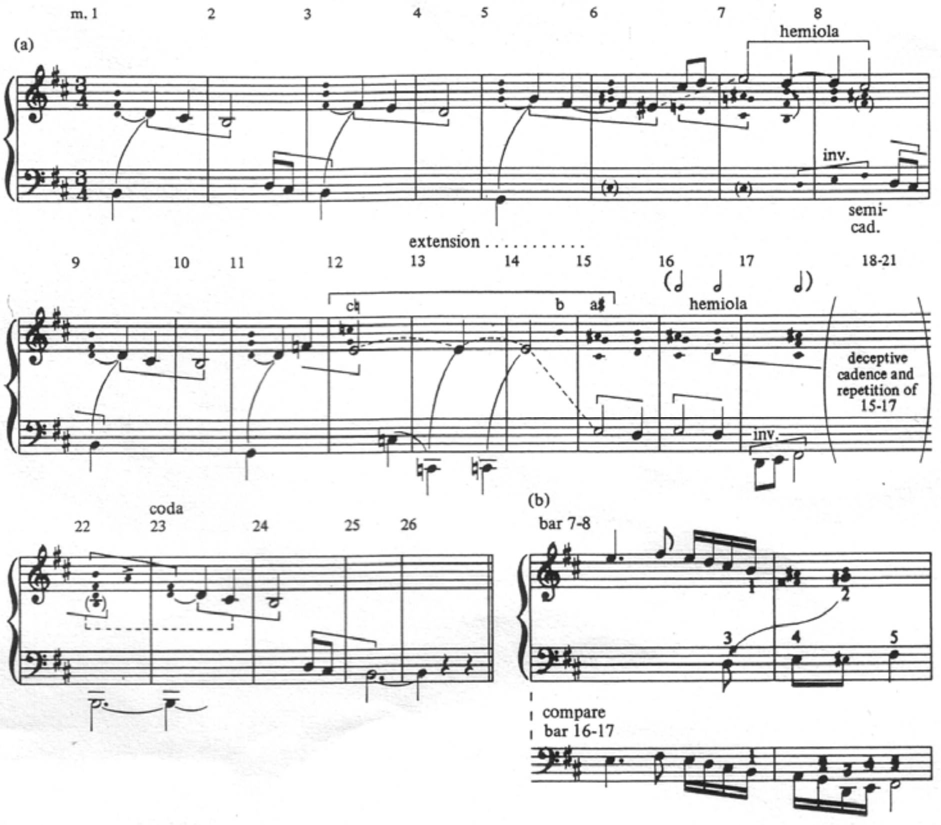

m. 1
2
3
4
5
6
7
8
(a)
hemiola
inv.
semi-cad.
extension . . . .
9
10
11
12
13
14
15
16
17
18-21
c♮
b
a♯
hemiola
deceptive cadence and repetition of 15-17
inv.
coda
22
23
24
25
26
(b)
bar 7-8
1
2
3
4
5
compare bar 16-17

Figure 5.3. *Foreground* motivic *analysis of the Chopin's Prelude in B minor. (from Burkhart 1973, p. 83)*

to an underlying voice leading interpretation rather than to a surface interpretation.

Figure 5.3 shows a foreground reduction of the complete piece. Here it is possible to see that at this level a series of hemiolas arise as characteristic features that mark the boundaries of the interrupted structure. These mark the end of sections at bar 8 (hemiola between 7 and 8), at bar 18 (hemiola between 16 and 17) and at bar 22 (hemiola between bars 20 and 21) as a repetition of the previous one. Curiously, this metrical phenomenon (that, according to its metrical character, does not usually appear tied to the underlying voice leading) becomes explicit at the foreground reductional level. Nevertheless, it is important to indicate that the hemiola of bar 8 can be considered more structural since it directly jeopardizes notes of the upper voice, whereas those of bars 16 and 20 are formed according to the inner voices (where the upper voice follows the configuration of the thematic motif).

As a particularly noticeable feature of this voice leading setting, the structural neighbouring tone, at the background level, appears much more emphasized in the second branch of the interruption. In the first place, the melodic neighbouring tone e^4 is held up here by a passing note, natural c^2, a tone that falls outside of the B minor diatonic frame. This natural c^2 does not become a c# until bar 15. Besides, the voices interchange in the first branch of the interruption (bars 6 and 7) occurred between an inner voice and the upper one, whereas now it is happening between two main voices. In that way, the neighbouring tone e^4 changes to the lower register, increasing its thematic and harmonic importance: it becomes *the* subdominant of the progression.

Curiously, at bar 21, a new interruption seems to happen: a similar harmonic progression I_6 $I_{6/4}$ $V_{5/3}$ is supporting a linear progression d^4-c^4. This kind of structure takes place when the first branch of the interruption is literally repeated, but is extremely improbable in a case like this, where the linear progression was sophisticatedly elaborated. A more detailed analysis shows us that it is rather a *quasi* interruption: on this point it is feasible to expect the $\hat{1}$ (b^3) on the final I (in root position). However, on the I (in root position) the d^4 reappears giving rise to an illusory new interruption. In fact, it is not an interruption, because what follows does not represent a new branch (that is, $\hat{3}$/I-$\hat{2}$/V-$\hat{1}$/I). Simply, the final b^4 ($\hat{1}$/I) is delayed, finally occurring at bar 24. The main thematic motif – which in fact consists of a descending d-c#-b, as mirroring the deeper structure on the surface level – is, in addition, repeated in the original register. This time, the starting motif functions as a conclusion. Will the Prelude start again? The prolonged tonic harmony, manifested in a stabilized chord, and diminution of rhythmical activity are indicating that that new reprise was an illusion. Thus, we can conclude that the Prelude is formally articulated into two parts, exposing the interruption at bar 8. This reading of the prelude is compatible with the idea of *underlying phrase schema* (Lerdahl 1991). Due to the underlying phrase schema being, in this case, founded just on the voice leading, we consider it valid to say that our proposal of articulation for this piece is based on the analysis of the prolongational structure in terms of the underlying voice leading.

A pianist who is sensitive to this interpretation, will intend to point out the articulation of bar 8 as clearly as possible. In order to do this, he or she will differentiate it from other less important events in terms of hierarchical structure. At the same time, he or she will instigate a similar action on the downbeat of bar 22, but will immediately have to make his or her real intention clear: this action is not a definitive one. The progression d^4-c$\#^4$-b^3 is finally completed there, therefore the piece is finishing.

As it can be appreciated, this Prelude shows such complexity and a plan of ambiguities, that it is sensible to think of the possibility of multiple readings. In fact, our reading of the voice leading structure presents many ingredients that are far from the normative principles of the theory. As Burkhart (1973) himself admits, the piece shows a strange case of textural setting, among other irregularities. The same element, on which the coherence of the voice leading interpretation is based, the neighbouring tone, invites another reading of the piece. This reading is based on surface features, which also present multiple ambiguities requiring some committed interventions on the performer's part. From this angle the completed composition may be thought of as an extended harmonic neighbouring tone B (minor) - C (major) – B (minor). Instead of *voice leading* concerns, here a particular surface feature supports this:

> *"As the Prelude opens, the left-hand melody sweeps up through arpeggiation sixteenth notes to hove on D, drawn out by its lower neighbour in languorous quarter-dotted eight-sixteenth. A lingering three eighth-note fall though the same arpeggio closes in sedate steps. The sheer registral span makes an arch of the melody's contour; and the progressive lengthening of sweep, hover and lingering fall make it graceful. Dynamics, too, swell and shrink as the line rises and falls."* (Guck 1991; p. 4)

Thus, the prelude can be seen as a concatenation of arcs, each of them having different paths but similar shapes. Each arc has a vertex in the upper tone of the lower melody (i.e. d^4 at bar 1; $f\#^4$ at bar 3, and so on). From this perspective, the first semiquaver (i.e. b^2 at bar 1 and 3, g^2 at bar 5, and so on) is less important than for the previous approach. The arches are chronologically ordered according to an increasing tension in order to achieve a culminating point on the g^4, the vertex of the third arch, at bar 5. Thus, this g^4 is understood as a goal of a broader movement. Note that this emphasized g^4, here a goal of a long distance structural direction, has markedly less importance according to the voice leading approach. Besides, this perspective points out the harmonic progression I-VI, which highlights the passing from minor to major mode –another feature that remains relatively hidden in the previous analysis. This approach leads to us to re-signify the neighbouring tones, as they were described in the voice leading analysis. In that analysis, neighbouring tones were described as part of deeper structural levels, but according to this new analysis, they can be considered as associated to certain superficial phenomena. For example, the Neapolitan II (at bar 12 and following) is unfolded on a noticeable register expansion, which is associated, at the surface level, with an accelerating succession of events: a repetition of the ascending arpeggio earlier than is expected. That is, the ascending arpeggio used to appear every two bars, but at bar 13 it appears every other quarter note. This acceleration gives rise to a hemiola. But this hemiola is not present at the analysis of the voice leading and the deeper components (see figures 5.2 and 5.3). On the contrary, it is a surface phenomenon. However, as metrical irregularity, the hemiola is contributing to a different way to articulate the musical form. Notice that, in this way, the piece exhibits at least four hemiolas, but they are located at different structural levels. The *deepest* is the one at bars 7-8. Then, superficially, come bars 16-17 and 20-21. And, finally, at the surface level is the hemiola of bars 13-14.

Regarding bars 13-14, probably, the double expansion – involving both register and rhythm – has been considered the foundation for writing down a *f* (dynamic indication), as it is given in many scores by well known editors (However notice that *Henle Urtext edition,* from which figure 5.1 was taken shows only one dynamic direction, a *pp* at the last bar.) If these surface phenomena regulate the use of expressive attributes, and if the chain of arcs reaches a culminating point from which its decrease starts, then activity at bars 13 and 14 (or more extensively from bar 11 to 15) will deserve to be highlighted beyond whatever the formal articulation is. Moreover, it is pertinent to remember that this climax (the passing from bar 13 to 14) is exactly the middle point, which divides the piece into to two equal parts (concerning length). The new presentation of the thematic material –at a lower register-, and its subsequent repetition and development are emphasizing the idea of a different content that is starting and that, subsequently, it is necessary to focus on this point. A pianist who is sensitive to this view will intend to clearly highlight bars 13-14, carrying out adequate actions in order to notify the listener about the increment of activity at this point. In this case, his or her actions will be more prominent than those he or she could do at bar 8.

Also from a surface perspective it is possible to understand bars 22 and following as a Coda, which resembles the main thematic material of the piece. At this point we can locate another interpretative puzzle due to the structural importance of this passage: it concludes the harmonic progression towards the I degree but it is still holding a prolongation of d^4. The ending character of the passage becomes *ambiguous* when the thematic material starts again at the following bar. This ambiguity is the root of the interpretative difficulty. Expression of this passage may contribute to clarify the interpretation. The performer may choose an intervention between playing the fragment either as a coda – that is, as a discretionary segment, which can be separated from the structural body of the piece - preceding it with actions that accentuate the b^1 at bar 22 as a structural ending, or as a delay of the structural $\hat{1}$ completing the fundamental progression d^4-c#^{4}-b^3. In this case the performer may introduce a change of either timing or dynamics (for instance, a stressed *ritenuto* during the quavers of bar 22.)

We can say that the first reading leads us to a *Prolongational Performance* and the second one proposes a *Non-prolongational Performance.* This qualification categorizes the performance as emphasizing either surface or prolongational structural features – “as *containing or not containing a prolongation*”.

Furthermore, there are other structural problems that whichever the point of view, no performer should ignore. The most noticeable has to do with elisions produced between every two bar phrase, involving the last note of the previous phrase and the first note of the following phrase (cf. the b^2 in the lowest register, bar 3). In that way, these elisions are generating functional ambiguity on theses notes, which are functioning both as ending and beginning. Although this dilemma is clearly a surface one, a *prolongational performance* also should have to solve it. This is a performance problem that no performer should ignore.

5.3.2 The performances

10 commercial recordings of the *Prelude* were taken, ranging over an extended period from 1934 to 1994. In that way, the sample involves performances of different periods, which represent different performative styles. These pianists are also well known as idiosyncratic performers. This aspect may be related to the singularity of their interpretative styles. They also exemplify different nationalities, ages, and backgrounds. Nevertheless, since this is a relatively small sample, this data could not be taken into account. Three of the performances were by Alfred Cortot (AC) who recorded the prelude several times throughout 20 years. This data allowed us to run an intra subject comparison. The complete list of performances is shown in table 5.1 (See examples 6-15 in disc).

5.3.3 Apparatus and procedure

Analysis of the ten performances was run using sound editing software (Soundforge 4.5) that allows visualizing the wave envelope. In that way, it is possible to identify the onset of every note very precisely in a range of milliseconds. However, an analysis-by-listening complemented the visual procedure, increasing the reliability of the measures taken. Since a basic pulse of quavers is rendered through the entire piece, this value was considered as the unit for measurements, without including semiquavers onsets. Because this procedure does not allow measuring chord asynchrony properly, when more than one note was sounding simultaneously, the set was taken as a block. However, when asynchrony was well noticeable, the highest note's onset was considered as the reference. These measurements give rise to establish Inter Onset Intervals (IOI). These were normalized and presented in a graphic way, where the horizontal axis represents time and the vertical the amount of *deviation* from the nominal value, according to which all the quavers (IOI) should show the same length. Therefore, values below zero show quavers shorter than that standard. This procedure displays a timing profile for each performance.

Analogously, data related to dynamics were obtained and analysed according to the software resources. This software calculates the peak of loudness in a given IOI. This measurement is considered faithful enough concerning levels of general loudness in the case of the piano, due to its particularly percussive attack. It is important to make clear that this procedure does not allow discriminating the relative loudness of every note in a chord. On the contrary, it only reveals the loudness of the chord as a block, as a whole. However, Repp (1999a, appendix) demonstrated that, in some textures, such as melody with accompaniment, sonority of the block is highly representative of the main melody's sonority. In spite of this, measurements concerning dynamics are more uncertain than timing data (Repp, personal communication). For this reason, dynamics information is discussed only as additional data.

5.4 Results

First of all a global description of the analysis of the 10 performances will be presented. As this analysis lead to the selection of two performances, which constituted the musical material of the listening experiments (chapter 6), these selected performances will be soon described in particular.

5.4.1 The average performance

The arithmetic mean of all profiles represents a sort of *average performance.* This performance is particularly interesting because, while it can be considered *natural* and *expressive*, it can be estimated as a standard, not particularly idiosyncratic (Repp 1998c, d). If we examine a given individual performance, which is very similar to the mean, we can say that this is a relatively *standard performance.* Contrarily, if a performance is relatively far from the mean, it can be considered a more *personal* or *original performance.* (Remember the assumption that in this sample all the performances are *acceptable*).

Figure 5.4 shows the *average performance* profiles. At a first glance two remarkable dynamic patterns are observed (squared brackets): (i) a dynamic pattern that indicates the foreground linear progression (d^1- c$\#^1$- b^1); and (ii) an increasing dynamic pattern from the third quaver of bar 2 that can be extended until the *Kopftone*, early in the following bar (this pattern is repeated with the following motif).

Therefore, from the dynamic perspective, a strong tendency is observed to indicate the arcs mentioned in the above analysis. However, it is worth noticing that the dynamic arc does not correspond with the melodic arc. The rounded-point arcs in the graph correspond to both kind of arcs and it is clear that they are shifted.

As far as the global dynamics of the piece it is possible to affirm that it is also compatible with that analysis since it presents two main peaks, one on the g^4 at bar 5 (a

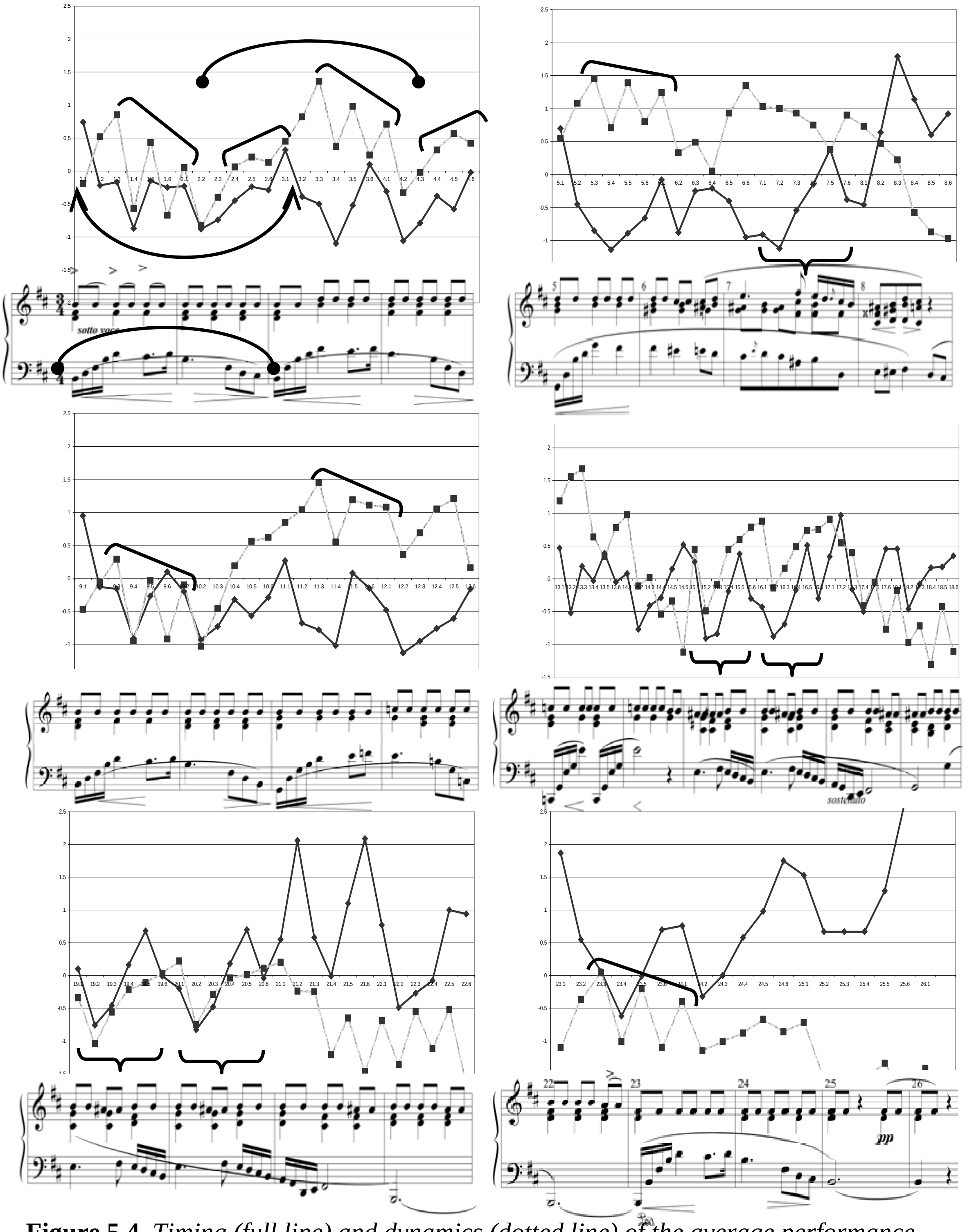
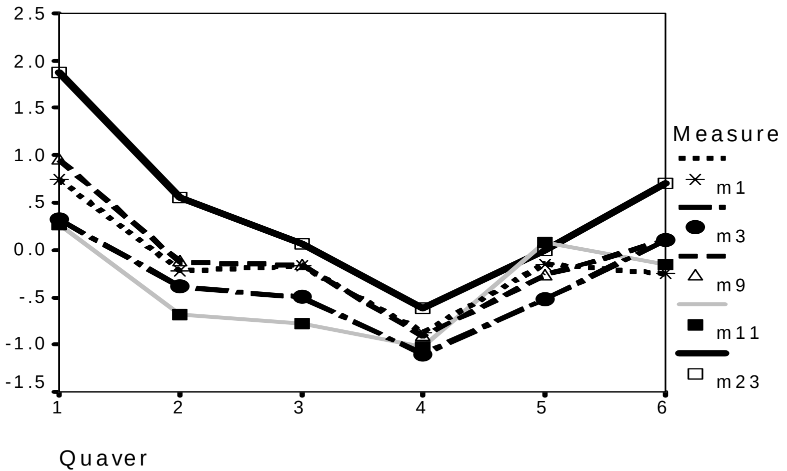


Figure 5.4. *Timing (full line) and dynamics (dotted line) of the average performance.*

directional goal) and the second on the e^4 of bar 13. On the other hand dynamic *troughs* seem to coincide with articulation points of the musical form at bars 8 and 18 (equidistant from the peak at bar 13). From the voice leading perspective, these two articulation points correspond to different hierarchical levels, since the one at bar 8 represents an articulation point that appears in the background (the *interruption* itself of the *interrupted form*) and the one at bar 18 appears in the foreground (see figure 5.3). Thus, the dynamics of the average performance are reflecting the *non prolongational* interpretation, containing a great arc with its vertex at bar 13.

Timing, in turn, seems to be more according to the interrupted form demarcation. The black full line of figure 5.4 outlines a noticeable *ritardando* towards the end of bar 8 and another towards the end of bar 21 (and beginning of 22), indicating clearly the articulation of the two branches of the interrupted form. When observing the timing profile in detail it is more possible to identify some interesting issues. For example, a noticeable lengthening of the first note of the semiquaver ascent (odd bars) is clearly displayed indicating that the first note of the bar is more emphasized than the d^4. In the even bars, on the contrary, the first note of the bar (longer) tends to be shortened. In this way an arc of the timing profile is settled by adjusting to the inversion of the melodic arc (see the arrowed arch). Nevertheless, the form of this inverted arc is not faithfully maintained throughout the successive arcs, and the unit of the timing pattern ends up being a single bar. For example, if we compare the timing of bars 1, 3, 9, 11 and 23 (presenting the same melodic motif) it is possible to appreciate a highly consistent behaviour across them. Figure 5.5 shows the detail of those five bars and the high level of association between them, through the correlations that are exhibited in the accompanying table. Interestingly, the timing of bar 11, where the motif preparing the modulation to C major and the great amplitude of the global arc appears, is the one that differentiates itself the most from the rest of the set (probably indicating that "*something different is coming*"). Anyway it is important to emphasize the fact that the timing pattern agrees with six-quaver units (1 bar).

On the contrary, by the configuration of timing patterns that include 4 quavers, a clear systematic conduct in the expressive treatment of the hemiolas is observed, that according to Burckhart (1973) is identified in the foreground voice leading description (see figure 5.3: bars 7-8; 16-17 and 20-21). The hemiola is a rhythmic resource that consists of replacing two notes by three occupying the same time span. In this particular case, the metre change is achieved by the replacement of two dotted half notes (each one representing one bar) by three half notes. This way, the hemiola can be understood as the reinterpretation of two ¾ bars as one 3/2 bar. The hemiola is a highly used metrical resource, particularly appreciated in ternary metre dances, related to key points for the musical form articulation. It works like a sort of *natural retention* of motion (*ritenuto*) at the moment of the harmonic cadence that closes the section. It is clearly a resource of form articulation, a kind of punctuation sign. For this reason it is possible to say that, in general,



	M 3	M 9	M 11	M 23
M 1	.847(*)	.965(**)	.782	.921(**)
M 3		.946(**)	.775	.937(**)
M 9			.766	.980(**)
M 11				.718

* $p < 0{,}05$ (bilateral).

** $p < 0{,}01$ (bilateral).

Figure 5.5 *Detail of the timing profile of the Average Performance - bars 1, 3, 9, 11 and 23. Correlation matrix between the six quaver timing patterns*

to make the hemiola explicit is to reinforce the articulation. With respect to this, then, in the analysis of timing, the aspect to consider is whether the organization of the patterns of timing accompany this internal redistribution of both bars exhibiting a certain pattern whose logic adjusts more to the half notes (4 quavers) than to the dotted half note (6 quavers). In regard to this, the timing of each set of four quavers (a half note) was analysed, 3 of them for each foreground hemiola (9 half notes altogether). A factor analysis (see below for an explanation of the use of factor analysis as a tool to identify common patterns among the timing profiles) of the nine rhythm groups was run. This analysis displayed two principal components. Each principal component or factor can be seen as a typified timing behaviour. In other words, the analysis allowed the identification of two different timing profiles for the 4 quaver groups that integrate the three analysed hemiolas. The left upper panel in figure 5.6 shows the profile of those two factors. Basically both consist of a parabola; the difference resides in the fact that either the first or the fourth note of the pattern is lengthened the most. However, in both cases the fact that the parabola *embraces* each pattern including the four quavers remains clear. The rest of the panels of figure 5.6 show the three foreground hemiolas indicating (with red or green lines) the pattern *type* (factor) that corresponds to each group, according to the values of correlation that each group showed with the results of the factor analysis rotated (see the complete explanation below, p.150). It is observed that almost all the 4 quaver groups fit the parabola described by factor 1, namely: $Y = x^2 .7245 + x (- 3.2166) + 2.6079$. In such sense, the third half note of the hemiola of bars 7-8, is the only one that identifies with factor 2 (a parabola described by the formula $Y = x^2 .4744 + x (- 2.9892) + 3.9147$) showing a correlation coefficient =.998. This difference in bar 8 may be interpreted as a break in the timing pattern when interpreting the two last notes of the bar as upbeats of the following bar. Thus, the d^5 (of the structural progression $\hat{2}$/I) is substantially lengthened.

Nevertheless the d^3 of the left hand appears not like an *echo* of the previous motif but like a part of what is going to come. In short, it is possible to affirm that the analysed bars roughly display an organization corresponding to four quavers, characterized by its correspondence with a parabola. This way, each hemiola is roughly in basic terms represented by three parabolas.

Dynamics does not seem to accompany those points so systematically. However, in the surface hemiola of bars 13 and 14 one can observe in the use of the dynamics the two patterns that form an inverted U for the two first half notes (the ample arpeggios of C major) becoming blurred in the third half note - showing a marked diminuendo. In this way, this hemiola appears as indicated by dynamic arcs in the form of an inverted U (for the two first 4 quaver groups). On the contrary, concerning timing, this hemiola is not identified with an only systematic timing pattern.

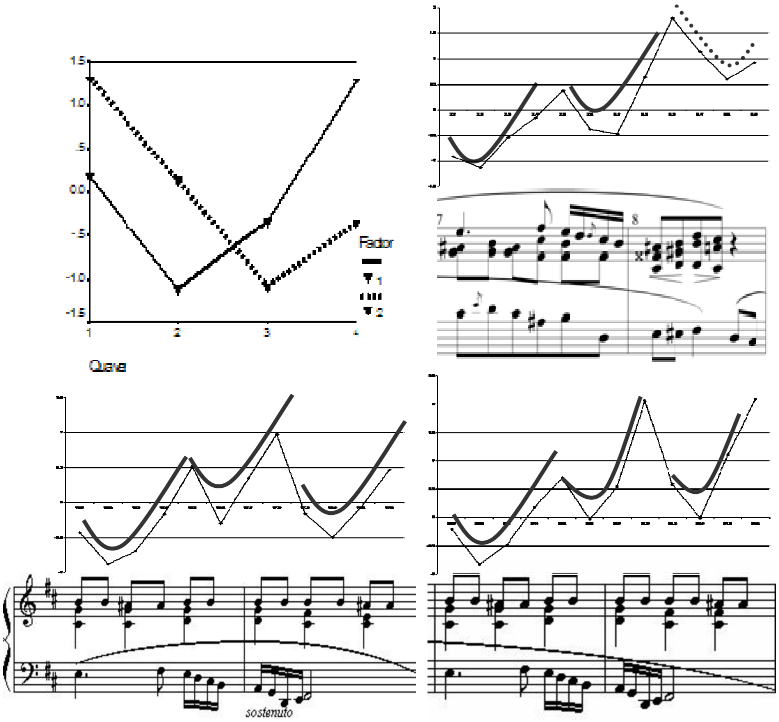


Figure 5.6 *Factor Analysis of the timing profiles at the foreground hemiolas (bars 7-8, 16-17 and 20-21). Extracted Principal Component graphs and their association with the analysed timing pattern (see explanation in the text)*

From the *average performance* analysis a question inevitably arises: to what extent can this virtual execution be considered as representative of the several performances integrating the analysed selection? In other terms, to what extent does this analysis allow to make inferences about the individual expressive strategies of the different artists? With the intention of studying the representative quality of the average performance the association (correlation) between each individual profile (corresponding to each of the 10 performances) and the average timing profile was analysed.

Table 5.1 shows correlation coefficients between every individual performance and the means of the timing and dynamics profiles. For the timing profiles the closest performance to the mean was Maurizio Pollini's performance. Curiously, the same performance was almost the closest to the mean concerning the dynamics profiles. In that way, we can see this performance as the most typical. Consequently, the analysis of this performance would provide some evidence concerning the relation between *average tendencies* and idiosyncratic expressive resources.

Artist and year of recording	Correlation with	
	Timing Mean	Dynamics Mean
Alfred Cortot (1934)	.804	.852
Alfred Cortot (1945)	.750	.897
Alfred Cortot (1954)	.820	.892
Andrea Lucchesini (1988)	.746	.795
Cyprien Katsaris (1993)	.791	.860
Martha Argerich (1977)	.768	.894
María João Pirés (1994)	.821	.859
Mauricio Pollini (1975)	.909	.907
Vladimir Ashkenazy (1979)	.730	.910
Vladimir Horowitz (1964)	.783	.797

Table 5.1. *Correlation coefficients of every performance with the average values.*

5.4.2 The Maurizio Pollini performance

In figure 5.7 the timing and dynamics profiles of the Maurizio Pollini (1975) performance can be seen. Initially one can appreciate that, although it is the *most similar* to the average,

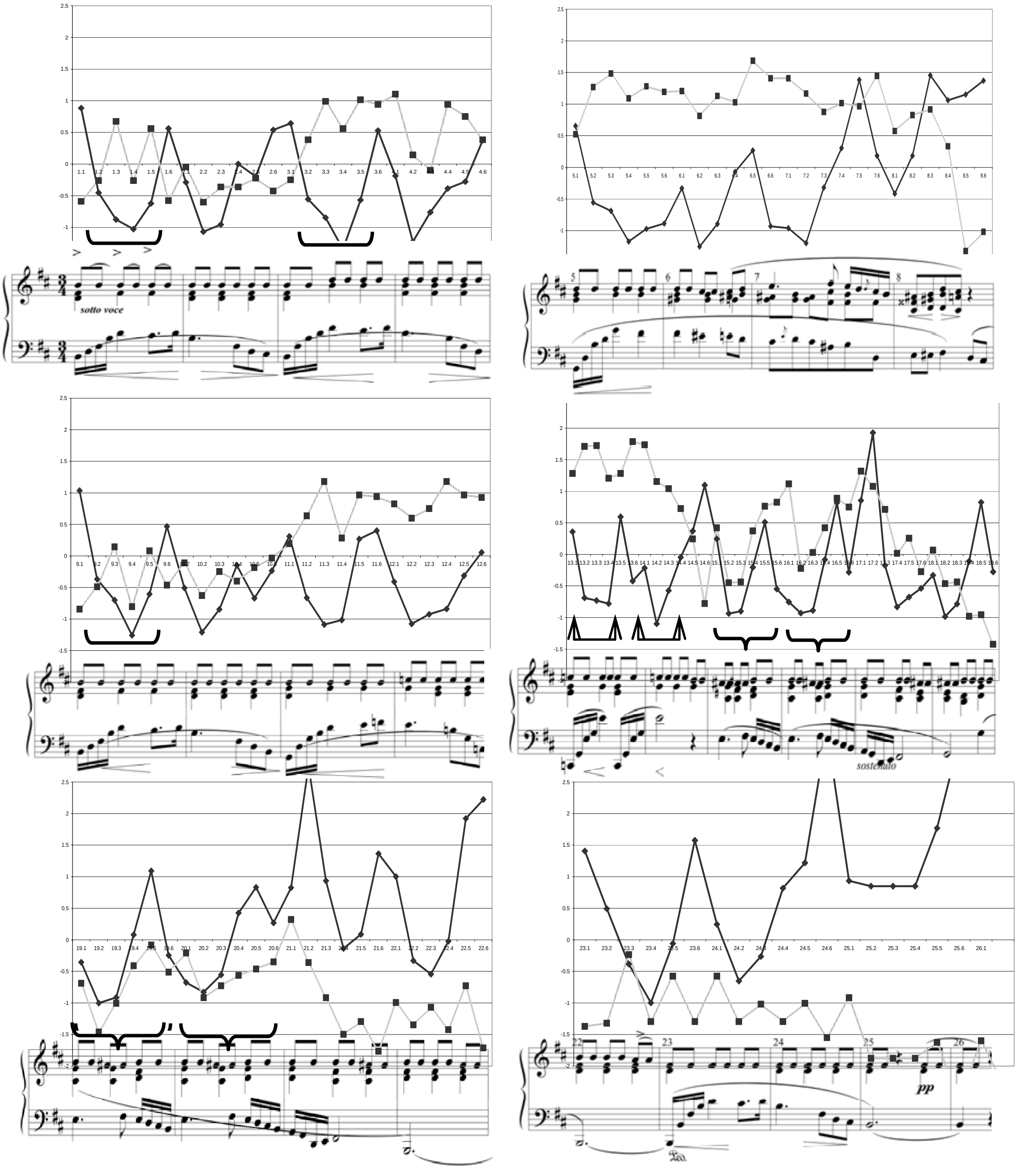


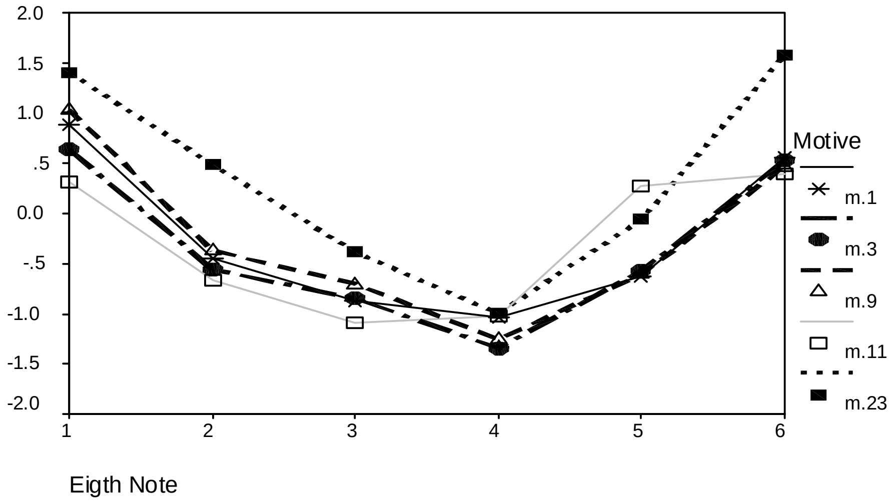
Figure 5.7. *Timing (full line) and dynamics (dotted line) of the Maurizio Pollini performance.*

at least as regards dynamics, this performance shows itself as much less systematic. In other words, it seems to be that the dynamic strategy of this interpretation does not always maintain an obvious contingency with associable structural characteristics. For example, the dynamic profile of the linear progression d^4- c#^{4}- b^3 is maintained only in its first appearance and then it becomes blurred from bar 3 (still more blurred at bar 5). Dynamics seem to be more at the service of global rather than local aspects. For example, it seems: (i) to indicate a global arc with a peak towards bar 13 (a smaller arc is also observed including the first 8 bars); (ii) to indicate the surface hemiola of 13-14 (notice the consistency in the use of dynamics between the first arpeggio in C Major – bar 13 - and its reiteration – bar 13-14); (iii) to indicate the reiteration of the bar 15-18 phrase in 19-22; it is remarkable how the reiteration of the phrase is played much more *piano* in general, a resource that is indicated by the composer in other preludes of the series (for example prelude N° 20 in C minor), but not here. Nevertheless, beyond these very general considerations, there seems to be no correspondence between dynamic details and structural traits.

With respect to timing, some characteristics conserve a systematic quality whereas others become considerably blurred:

(i) The feature that seems to conserve a systematic treatment of its timing patterns the most is the arpeggio motif in quavers (see crochets) followed by a quarter note and a dotted quaver and semiquaver group. This motif appears 5 times in this way (bars 1, 3, 9, 11, 22), another three times only the semiquaver arpeggio appears but the motif is not completed in the same way (bars 5, 13 and 13-14). Figure 5.8 shows the deviation curve of each quaver corresponding to the five complete repetitions of the motif and the matrix of correlations among the series of timing deviations;

(ii) The different treatment of the foreground hemiolas. Similarly with the average performance the three foreground hemiolas were analysed (bars 7-8; 16-17 and 20-21) by means of a factor analysis. This displayed two principal components. Thus, it was possible to identify two different ways of approaching the performance of the 4 quaver groups as regards timing. The upper left panel of figure 5.9 shows the profile of these two factors. Again, both factors consist here of a parabola, with similar characteristics to that seen for the average performance. In both cases it is clear that the parabola *completes* a pattern including 4 quavers. The rest of the panels of figure 5.9 show the three foreground hemiolas indicating (in full or dotted line) the pattern *type* (factor) that corresponds to each group (in agreement with the correlation values that each group showed with the results of the rotated factorial analysis). Thus, the third half note of the 7-8 bar hemiola, whose behaviour is the least similar to a parabola, showed a moderate correlation with both



	m. 3	m. 9	m. 11	m. 23
m. 1	.982 (**)	.983 (**)	.786	.953 (**)
m. 3		.981 (**)	.825 (*)	.975 (**)
m. 9			.780	.951 (**)
m. 11				.777

* $p < 0.05$ (bilateral)
** $p < 0.01$ (bilateral)

Figure 5.8. *Timing profiles detail of the Pollini (1975) performance (m. 1, 3, 9, 11 and 23). Correlation matrix between timing profiles of six eighth note patterns (below)*

factors (.760 with factor 1 and .643 with factor 2). In opposition to this, figure 5.7 shows that the surface hemiola at bars 13-14 (highlighted in arrowed crochets) does not establish any systematic timing pattern. It is possible to appreciate that whereas the two first half notes begin with lengthenings, the third one finalizes with a lengthening. There is no timing gesture reinforcing the 3 half note structure (instigated in the first two only by the dynamics);

(iii) In spite of the observed 4 quaver patterns, a 6 quaver pattern also emerges

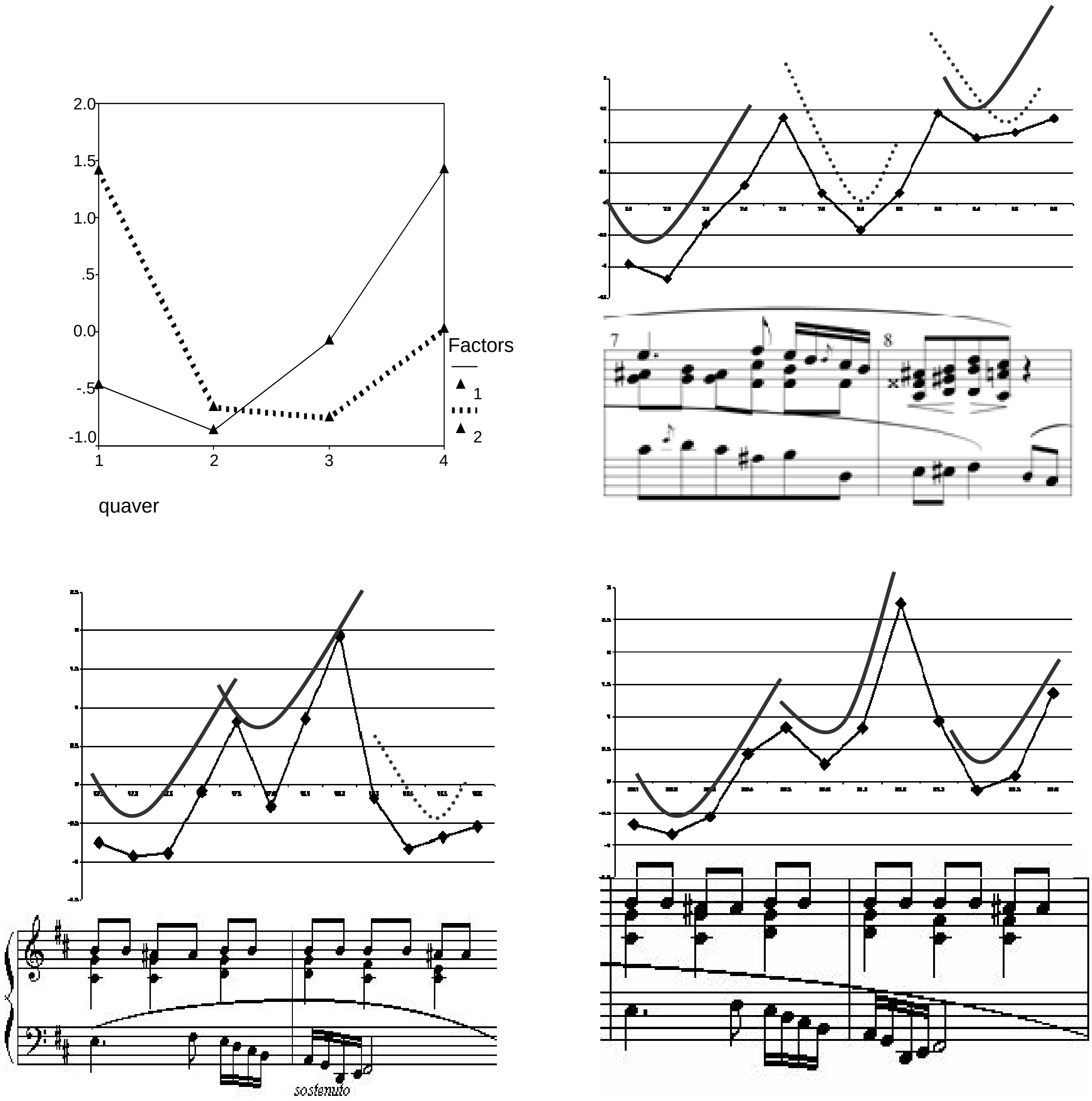


Figure 5.9 *Factor Analysis of timing profiles of the foreground hemiolas (bars 7-8, 16-17 and 20-21) of Maurizio Pollini's performance. Extracted Principal Components graphs and their association with the performed timing patterns.*

reiterating the b surface motif (see curly brackets in figure 5.7). The ambiguity of the passage stands out, therefore. It is possible to say that in this passage Pollini is exposing this ambiguity between the musical surface and the underlying structure by moving himself ambiguously according to both structures.

From this analysis it is possible to infer that Maurizio Pollini’s performance captures some characteristics related to the interpretation of the composition in *voice leading* terms. In particular the articulation of bar 8 and the noteworthy timing of the hemiola passages affirm this idea. Nevertheless, other characteristics of the performance, for example the ritardando at the end of bar 13, allow linking it with the *surface* (*non prolongational*) interpretation. One has said repeatedly that the average performance manages to capture characteristics of the different performances. The data collected here, showing high correlations between the individual performances and the average one, seem to confirm it. Nevertheless, at the time of analysing those characteristics that define the performances and associate them to those structural issues that make the work problematic as an interpretative artistic object, it seems that these connections become blurred. It is possible to think, after that, that other performances existing as more extraordinary may therefore be more receptive of the contradictory interpretations proposed in the earlier analyses.

With the intention of advancing in the study of the relation between the performance particularities and the composition’s structural components, some possible weaknesses of the analysis of the average performance were examined more deeply. The subsequent study advanced in two directions: (i) the search of more defined differences and similarities between the performances, for which a principal components factor analysis was run; (ii) the study of the relation between the most idiosyncratic behaviours of the performers and the piece's interpretative challenges for which *problematic passages* were identified along the entire piece.

5.4.3 Factor analysis[2]

In order to identify commonalities and differences among the performances, a principal component factor analysis was run. This procedure examines the individual profiles of every performance (ten, in this case), uses correlational analysis to determine how some of them share certain characteristics, and turns those into a smaller number of "virtual" profiles. These 'virtual profiles' are the principal components or factors. The procedure also gives a measurement of association between each of the individual profiles and the obtained factors – the profile's loading. In that way, it is possible to evaluate to what extent each profile is representative of each factor. Thus, each of the factors may be considered as a *performance strategy*. If all of the profiles were highly similar, then it would be expected that the analysis only give one significant factor, indicating that the percentage unexplained by this factor is insufficient to constitute itself as a second factor. On the contrary, if strategies used by the different artists are dissimilar, more significant factors will arise. In this case, applying a Varimax Rotation is convenient. This procedure facilitates the interpretation of the factors and modifies the original factors in such a way that more individual profiles will be fitted to a given factor and less individual cases will be associated to two factors (for an inclusive discussion and foundation of this method applied to the analysis of differences and commonalities in performance, see Repp 1992c).

The first interesting finding emerging from the factor analysis is that the study of dynamics profiles displayed only one principal component. This means that every dynamic strategy is identified to each other in a very similar way, in such a way that it is not possible to join them together into groups of performances sharing interpretative dynamic strategies. This way, the average performance analysis is the best representation of the dynamic commonalities.

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[2] Although *Factor Analysis*, as an analysis (statistical) tool has been already utilized in previous pages, a more extensive explanation is presented in this section in order to better understand why each extracted component can became into an analysis unity.

Concerning timing, the factor analysis of the profiles yielded two principal components, which together explain 75.86% of the variance. Table 5.2 shows the most associated relations between each profile and the principal component (indicating the highest loading for each profile). The most interesting result arises as a consequence of the strong association among all the Alfred Cortot performances, and the subsequent differences with all the others. Noticing the generational difference between Cortot's performances and the others is also pertinent.

Artist and year of recording	First PC – Loadings	
	1	2
Alfred Cortot (1934)		.882
Alfred Cortot (1945)		.934
Alfred Cortot (1954)		.868
Andrea Lucchesini (1988)	.864	
Cyprien Katsaris (1993)	.653	
Martha Argerich (1977)	.783	
María João Pirés (1994)	.853	
Mauricio Pollini (1975)	.665	
Vladimir Ashkenazy (1979)	.715	
Vladimir Horowitz (1964)	.692	

Table 5.2. *Principal Components derived from a factor analysis for all performances. (Columns show rotated principal component loadings of each performance.)*

The graph in Figure 5.10 shows the timing profiles corresponding to the obtained Principal Components. PC^1 starts lengthening the quavers located on the strong beat, every other one. Nevertheless, this strategy blurs and is definitively abandoned when the thematic motif passes to the upper register (bar 7). The last quaver of each two bar arc is considerably extended (see for example bars 2.6 and 4.6). This characteristic directly remarks an important interpretative dilemma the prelude displays in respect to its surface

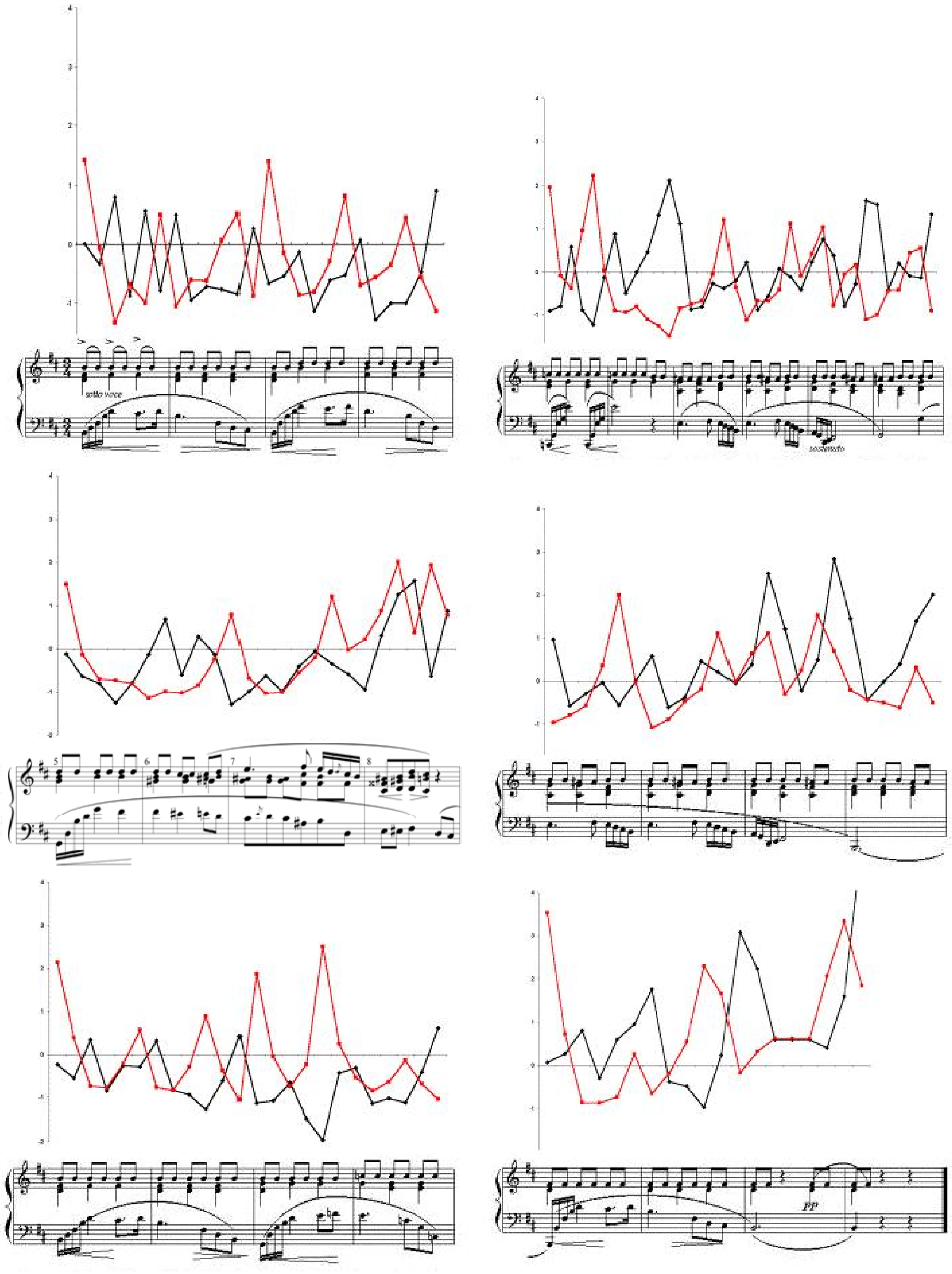


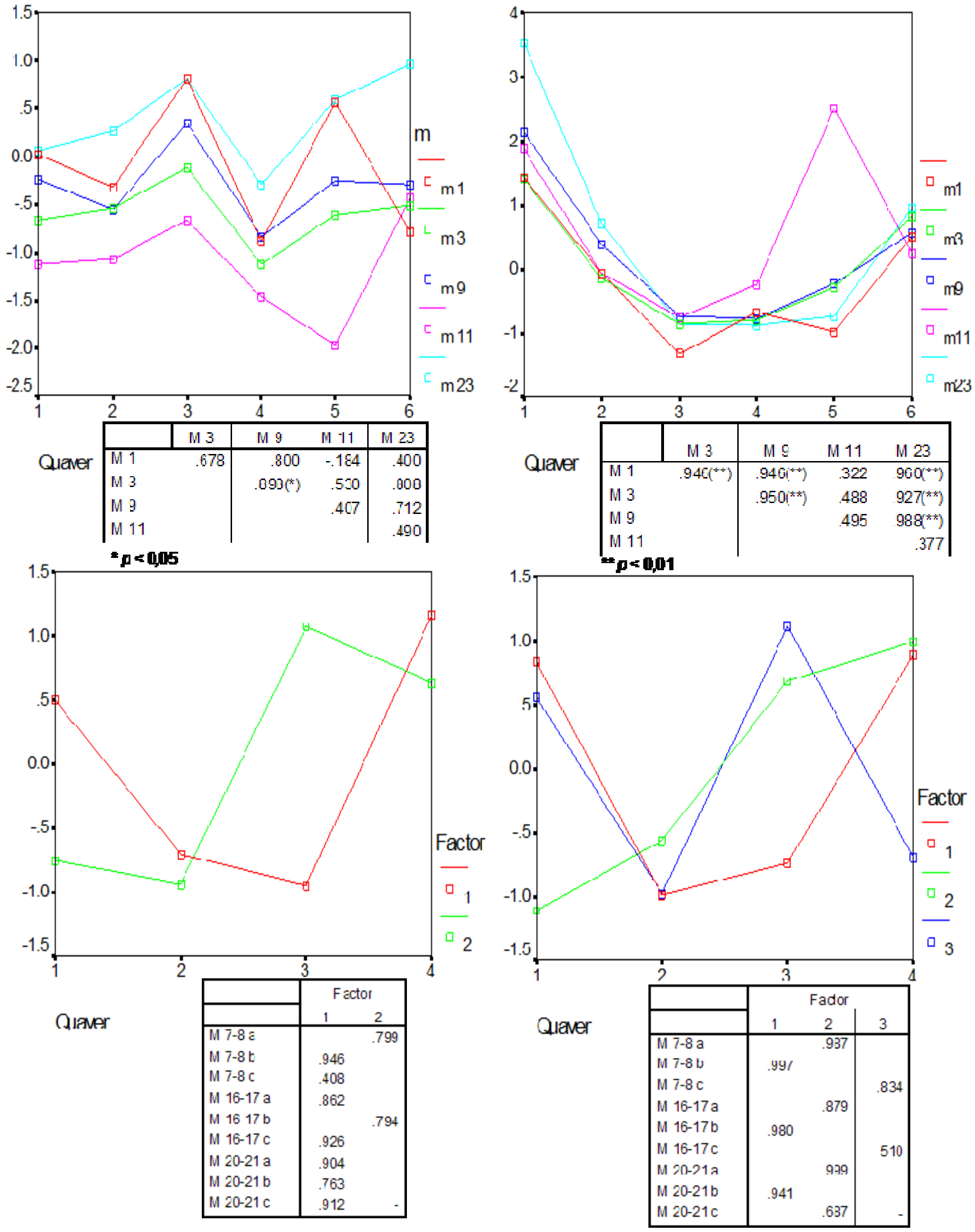
Figure 5.10 *Profiles of the principal components (standardized values).* *PC^1in black, and PC^2* (Cortot *Component) in red.*

characteristics: the overlap of contiguous two bar arcs. The first note of the arc (see for example b^2 of bar 3.1) can be understood, at the same time, as the last note of the previous arc. Principal component 1 (PC^1) shows a strategy in tackling this dilemma: it lengthens the last note of the previous arc and restarts the following arc much faster. On the contrary, the strategy of PC^2 is completely different. Earlier in the prelude, timing would seem to be at the service of melody rather than to mark some metrical or formal issue. In principle the first quaver is lengthened, emphasizing b^2. Soon the last quaver of the bar is lengthened giving time to clearly articulate the semiquaver d. And finally the fifth quaver of bar 2, d^3, which anticipates the b^2 as the end of the previous unit and the start of the following one, is lengthened. But the next arc presents a subtle difference: the third lengthened note is not the f^3, occupying the fifth quaver of bar 4, but the b^3, of the previous quaver. Evidently, the preoccupation is higher for the notes themselves, beyond rhythm and metric position. The problem of the overlapping is faced with this strategy remarkably retaining the problematic note, like emphasizing its sense of closure and soon setting itself in motion much more quickly. Evidently both PCs are accounting for different strategies to undertake ambiguous points that are crucial as regards the composition's interpretative problem. Another remarkable feature of this analysis arises from the consistent strategy of PC^2 for every beat that the ascending initial semiquaver arpeggio is repeated. This is not so consistent in PC^1. However, the use of strategies clearly different for each factor can be observed, which modifies the metrical status of the motif. For example, PC^1 lengthens the highest note. Conversely, PC^2 lengthens the lowest note. This can be understood as two different ways to face an extremely ambiguous performance gesture. As such ambiguity is related to the metrical status of the notes, one strategy emphasizes the point as thetic, the other emphasizing its anacrusic character. But it is also possible to understand these differences from the point of view of PC^2 in terms of favouring of the melodic component rather than of metre. In this way, by the lengthenings, PC^2 would manage to emphasize notes that are of central importance in the structure shaping the line that contains the bass and soprano voices.

Both in the average performance analysis and in Mauricio Pollini's one, a high degree of consistency between the timing patterns with 6 quavers and 4 quavers was observed. From this, a clear intention to give account of the particularities that emerge in the metric structure when the foreground level of the prolongational structures were left exposed, was assumed. In spite of this, the bar 8 performance, where a more forceful mark would be expected, seems to be less defined than the one of the other passages in the piece. Then, the question arising is, if the *average* performance did not show a clear definition in this point, will the factor analysis be able to identify performances that may be considered either as *prolongational* or *non prolongational*? Therefore, the idea is to examine the factors extracted in particular in those points in which ways to organize the rhythmic-metric patterns according to 6 quavers may be related to a more *non prolongational* interpretation, while configurations of 4 quavers may be associated to a *prolongational* interpretation observing underlying attributes.

Regarding this, bars 13/14 represent a crucial point. As we may expect, it is possible to observe noticeable differences between both factors. Both principal components have an accentuated *ritenuto*. In that way, both of them are leading us to focus on this passage. But a more careful examination shows us that PC^1 (in black) makes a progressive *ritardando* divided into three stages, corresponding to the three parts shaping the surface hemiola. That means, the first four quaver pattern is slightly retained, the second one is more retained, and the third one is even more retained. In that way, the motion reaches its maximum retention. In opposition, the *ritardando* of PC^2 (in red) first highlight the c^2 in the bass. Then, it accelerates the tempo intending to link this passage with the following one. Finally, the theme, which starts at bar 15, is taken to a corresponding tempo (without sudden changes). In addition, this PC presents many more *peaks of ritenuti* – of this large range – than PC^1.

However, both components display a more ambiguous behaviour with respect to the motives of 6 and 4 quavers. Figure 5.11 exhibits the graphs for the 6 (above) and 4 quaver (below) patterns with the corresponding tables (similar to those exhibited in figures 5.5 and 5.6). PC^2 shows 6 quaver patterns compatible with a parabola, while PC^1 seems to be reinforcing the metric position of notes: the *zigzag* pattern is lengthening the metrically



Quaver

	M 3	M 9	M 11	M 23
M 1	.678	.800	-.184	.400
M 3		.090(*)	.530	.000
M 9			.407	.712
M 11				.490

* $p < 0{,}05$

Quaver

	M 3	M 9	M 11	M 23
M 1	.946(**)	.946(**)	.322	.960(**)
M 3		.950(**)	.488	.927(**)
M 9			.495	.988(**)
M 11				.377

** $p < 0{,}01$

Quaver

	Factor	
	1	2
M 7-8 a		.799
M 7-8 b	.946	
M 7-8 c	.408	
M 16-17 a	.862	
M 16 17 b		.794
M 16-17 c	.926	
M 20-21 a	.904	
M 20-21 b	.763	
M 20-21 c	.912	-

Quaver

	Factor		
	1	2	3
M 7-8 a		.937	
M 7-8 b	.997		
M 7-8 c			.834
M 16-17 a		.879	
M 16-17 b	.980		
M 16-17 c			510
M 20-21 a		999	
M 20-21 b	.941		
M 20-21 c		.637	-

Figure 5.11. *Comparison of timing patterns with 6 and 4 quavers of the two Extracted Principal Components. (See explanation in the text)*

strong quavers. The 4 quaver patterns are in no case as highly systematic as in the previously analysed cases. PC^2 in particular, by virtue of the distribution that the three factors show in each hemiola, seems to ignore the distribution according to 4 quaver groups.

The second ambiguous point is at bar 22, the fall to the b^1 at the lowest register. PC^1 lengthens the previous note (the upper voice a#^{4}, bar 21.6), as though it were a real ending, much more markedly than PC^2 does. Although PC^2 does not lengthen this note so much, at bar 23 there is a noticeable feature. It very markedly replicates the initial gesture, while PC^1 uses a new gesture. We could say that PC^1 has just finished and now is playing a *coda* (a fragment displaying another formal function), while PC^2 has threatened to finish, but started once again (displaying the beginning formal function). Finally, at the next bar, when the tonic arrives, it becomes clear that the prelude does finish and it progressively stops.

Contrary to the predictions, we observe very similar behaviours for both factors at bar 8. However, notice that PC^1 lengthens it considerably less than the point at bar13, which means we can understand that, in spite of the structural importance of bar 8 as a form articulating point, the emphasis is directed towards the mid-point of the prelude (bar 13). Because of all of this, it is possible to think preliminarily that PC^1 is more oriented to an interpretation of the piece as an ample arc. PC^2, in turn, would be representing a perspective more related to *voice leading.*

As we have indicated, each factor offers a description that is more representative of the essence of the actual performances than the average profile. Paradoxically, these profiles appear as less systematic. Contrary to that obtained from the analysis of commonalities, the detail of each performance in particular may offer a profile more compatible with the hypothetical interpretations derived from the voice leading and surface analyses developed above. Accordingly it is possible to think that the profiles we are looking for are exactly the result of performances tending to be idiosyncratic rather than general. It is also feasible that the greater display of individuality is possibly related to those apparently more ambiguous structural aspects. In other words, it is possible to hypothesize that in the face of structural ambiguity problems the interpretative profiles appear more *original*. On this matter, this piece has many points of ambiguity, which are those that we have been observing. In order to find a more *personal* behaviour, the passages of the piece that appear more ambiguous were analysed compared with these more clear parts.

5.4.4 The analysis of *ambiguous zones*

As we have seen, every point in the average profile represents a mean of how far each of the ten pianists was from the nominal value for that particular note. However, since some notes show high standard deviations and others present less variability, the correlations found tell us little about the timing strategy of the group of artists.

As we have already said, this piece has plenty of zones that exhibit structural ambiguity. A part of this ambiguity is due to issues related to the musical surface. In particular, we are referring to the overlap of successive arcs and the surface hemiola indicating the upper vertex of the major arc (at bars 13-14). Other ambiguities are due to the interpretation of the foreground hemiolas, which contradict the thematic material constituting the second theme. That is to say, if we think that, for example, bar 16 is a repetition of bar 15 (a 6 quaver pattern), then, it will collide with the idea that at bar 16 a hemiola starts (a 4 quaver pattern). Because of that we may think that more important differences between pianists concern the original way of facing and solving such problematic situations of ambiguity. In order to examine this, the prelude was re-analysed marking three kinds of regions: (i) clear zones; (ii) ambiguous surface zones, and (iii) ambiguous deep zones. Figure 5.12 shows in the rectangular frames the ambiguous surface zones, and in smoothed frames, the ambiguous deep zones.

Standard deviations were analysed for each zone. An ANOVA for the means of SD timing values in the three *zones* yielded significant differences among the different zones ($F_{[2,148]}$= 5.561; p = .005). A post hoc analysis revealed significant differences between

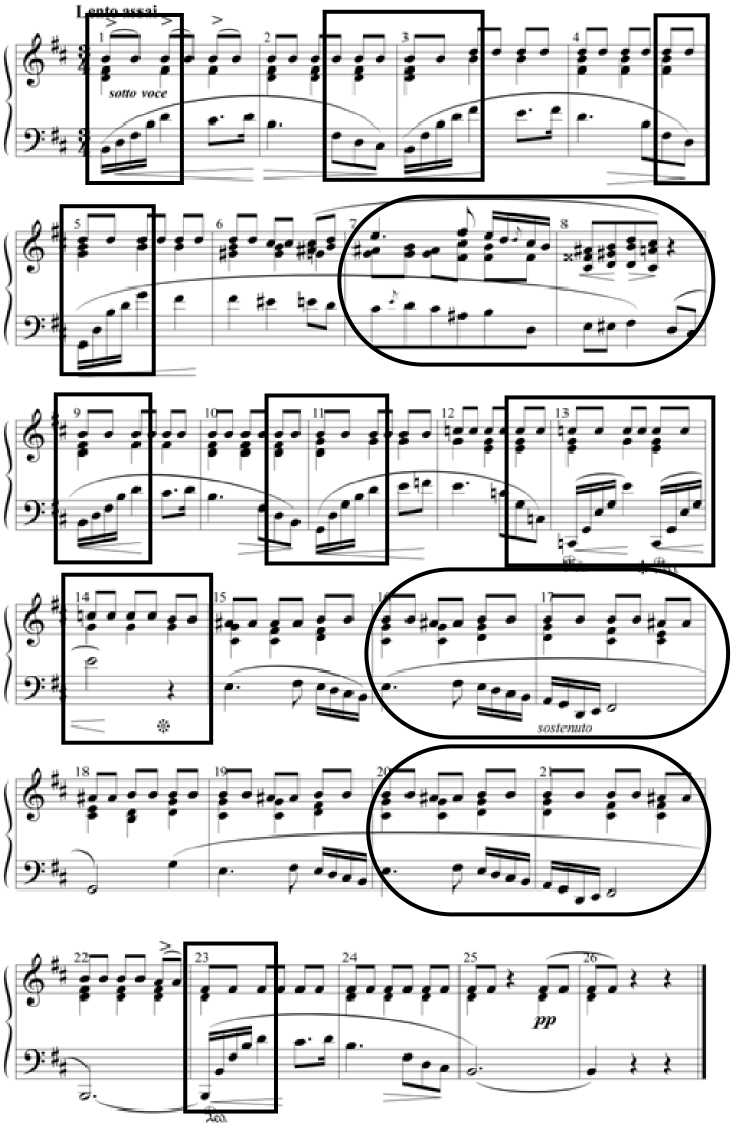


Figure 5.12 *Ambiguous zones in the Chopin Prelude in B minor*

ambiguous surface zones (mean = .699) and the other two zones (clear zones mean = .524; and ambiguous deep zones = .547). That means that in general pianists use more varied timing strategies in *ambiguous surface zones*. However, dynamics profiles just showed marginal significance [$F_{[2,148]}$= 2.399; p = .094] for differences between the three zones, and for this reason dynamics were not taken into account for the following analysis.

An analysis of the association (correlation coefficient) between every performance's timing and the means of both ambiguous and clear zones was run. Table 5.3 displays the corresponding correlation coefficients.

	Complete piece	Clear Zones	Ambiguous Deep Zones	Ambiguous Surface Zones
AC (1934)	.804(**)	.818(**)	.833(**)	.832(**)
AC (1945)	.750(**)	.753(**)	.882(**)	.695(**)
AC (1954)	.820(**)	.882(**)	.948(**)	.605(**)
AL (1988)	.746(**)	.817(**)	.708(**)	.525(**)
CK (1993)	.791(**)	.823(**)	.830(**)	.648(**)
MA (1977)	.768(**)	.855(**)	.872(**)	.359(*)
MJP (1994)	.821(**)	.882(**)	.823(**)	.594(**)
MP (1975)	.909(**)	.942(**)	.866(**)	.843(**)
VA (1979)	.730(**)	.710(**)	.845(**)	.777(**)
VH (1964)	.783(**)	.885(**)	.741(**)	.457(**)

** p < 0,01, * p < 0,05

Table 5.3. *Different correlations of timing measurements for every performance with standard values for the complete piece and for clear and ambiguous zones.*

Lower coefficients account for a more *original* treatment of the problematic passages. As can be seen above, from a more global point of view, PC^2 (which represents the three performances of Alfred Cortot) could be accounting for a prolongational performance. On the contrary, PC^1 (representing the seven more contemporary performances) could be accounting for *non prolongational* performances. Table 5.3 allows one to say that the 1934 performance by Alfred Cortot (as a member of the group better represented by PC^2) seems to be the performance that resolves in the most original way the passages that locally would contribute to identify a *prolongational* performance (the *ambiguous deep zones*). Accordingly, the Martha Argerich performance (as a member of the group better represented by PC[1]) seems to be the most original in resolving those zones that would contribute to identify a *non prolongational* performance (the *ambiguous surface zones*).

For these reasons it was decided to study in detail Alfred Cortot's (1934) and Martha Argerich's performances with the intention of determining if, through their particular individual characteristics, they could be identified with a *prolongational* and *non prolongational* perspective respectively. Although these two performances represent different performative traditions, is not possible to determine from the data analysed here, if the differences that emerge from this analysis are associated to the performance epoch or to the artist's idiosyncrasy.

5.4.5 Analysis of two selected performances

Although these performances were selected, as was shown, mainly according to the analysis of timing, in this section the concurrent use of both timing and dynamics will be analysed. In this way, the intention is to describe, as exhaustively as possible, different interpretative strategies in order to relate them to a particular interpretative analysis.

The graph in figure 5.13 exhibits standardized values of each inter-onset-interval (timing) and their peak sound (dynamics) corresponding to each quarter note beat (in order to be clearer, values at the quaver level will be shown in more detail bellow). It is possible to notice some similarities between both performances. For example, in the concluding bars (bar 22 and following) both performances show a progressive tendency to decrease dynamic values while lengthening time. This dramatic fall in tempo and dynamic is a part of a remarkably extended process coming from bar 18 - when the reiteration of the second thematic material begins - which clearly indicates that the piece as a whole is ending.

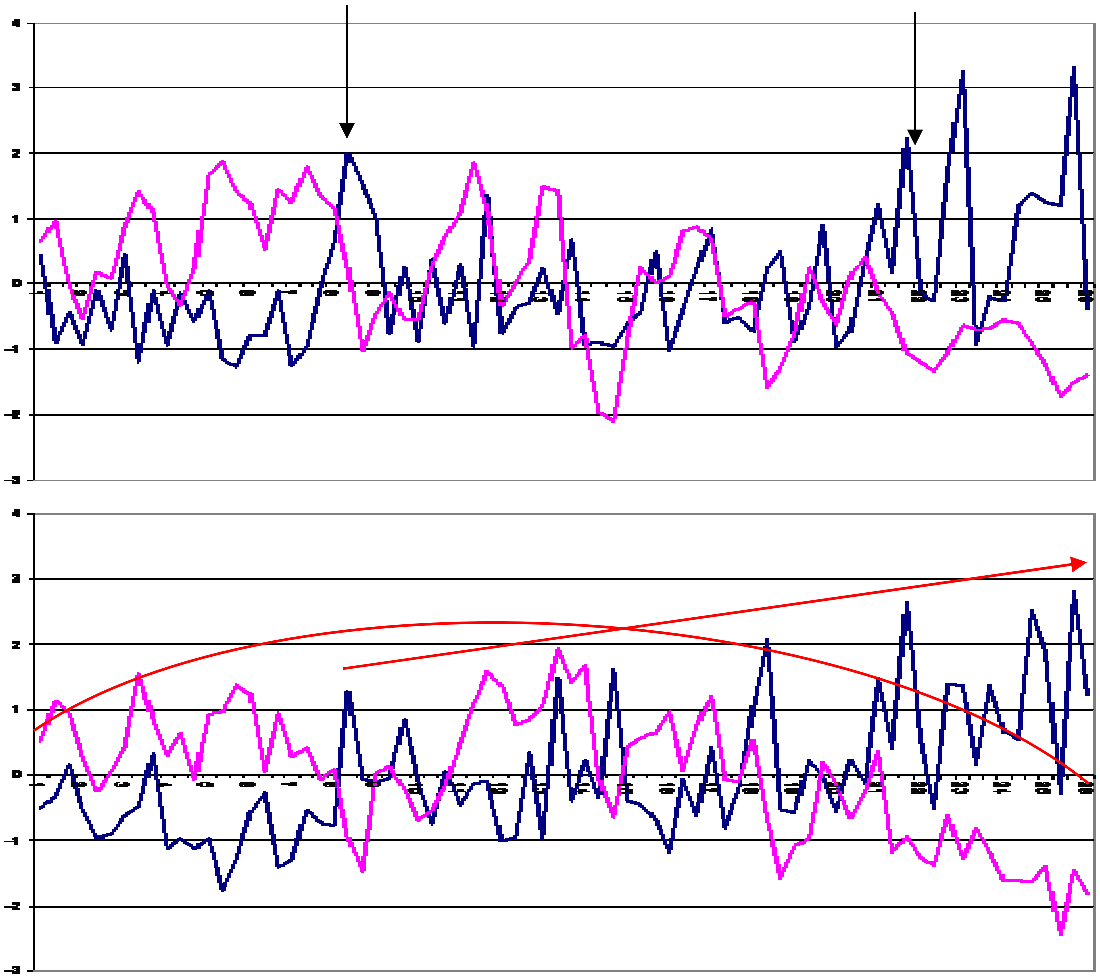


Figure 5.13 *Timing (blue) and dynamics (magenta) profile for performances by Alfred Cortot (top) and Martha Argerich (bottom)*

However, as it was already said, differences are more interesting and relevant to this analysis than similarities. Those are indicated in the graphs of figure 5.13 and are extended in the subsequent figures.

The most noticeable *ritardando* performed by Cortot occurs at bar 8 (Figure 5.14). This assertion does not contradict the previous one, which alluded to an extended *rallentando* at the concluding bars. The *ritardando* as a formal articulator - not only mentioned by the interpretative tradition (Keller, 1973) but also highlighted by cognitive theories (Todd, 1985) - consists of a certain time deviation followed by the restoration of the original tempo. In the case of the closing fragment of the Prelude, the performed

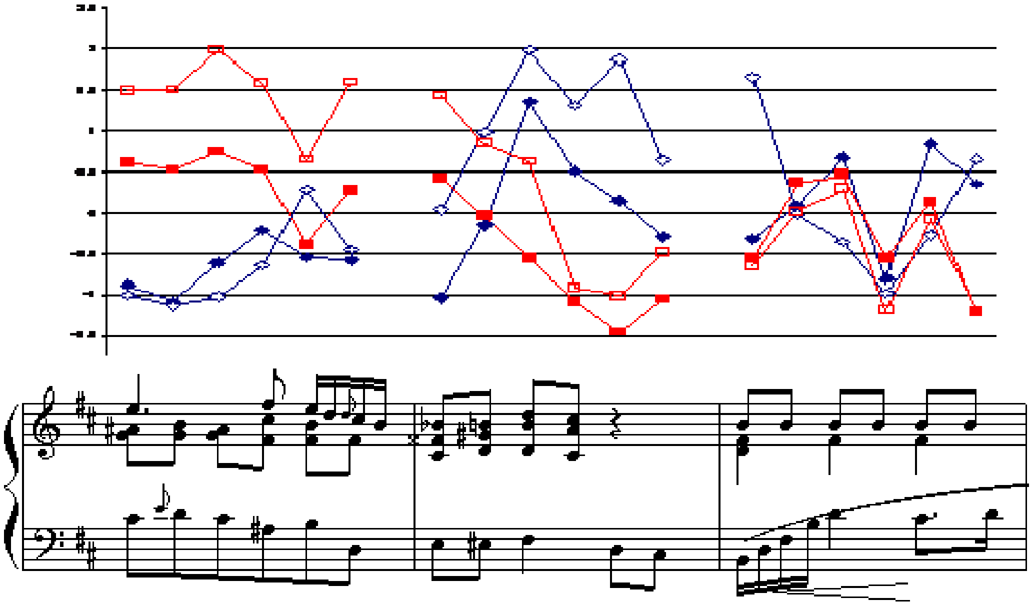


Figure 5.14 *Detail of bars 7-9 (values of quavers). Blue lines represent timing deviations, red lines represent dynamic variation. Full markers correspond to M. Argerich's performance and empty markers correspond to A. Cortot's*

rallentando is introduced, as mentioned above, as a macro process of closure of the piece as a whole, from the change of tempo happening at bar 18 in both performances. The *ritardando* at bar 8 is indicating, undoubtedly, the *Interrupted Form* (Figure 5.2). Although Argerich, as a logical interpretation, also plays *ritardando* in this place, such a resource is relatively less pronounced than the Cortot one (figure 5.14). Moreover, in the context of the entire Argerich performance, this *ritardando* is not the most prominent (cf. Figure 5.13), contrary to Cortot's performance. The complete set of actions of this articulation point also involves, in both performances, a dynamic *diminuendo* tendency followed by a noticeable repetition of an initial gesture at the beginning of bar 9 (compare bars 1 and 9). However, these performances are slightly different: Cortot imitates the gesture d^5-$c\#^5$ in bar 8.3 and 8.4 (long-short) in d^2-$c\#^2$ in 8.5 and 8.6. This imitation enlarges the gap to the reprise at bar 9 more than Argerich’s strategy, which consists of accelerating the repetition of the gesture – 8.5 and 8.6 - as she was connecting this phrase-end with the beginning of the following idea. In that way, Cortot presents a very idiosyncratic treatment of the timing

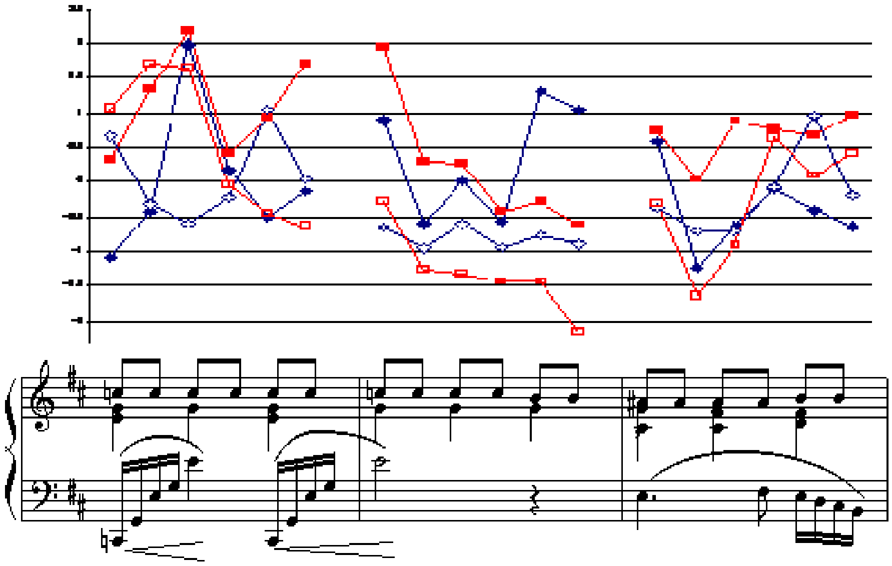


Figure 5.15 *Detail of bars 13-15.*

of the hemiola. This feature is very important since this is a crucial point, where the hemiola is highlights the interruption. Dynamics subtly accompany this approach by continuously ascending from 8.5 to 9.3. On the contrary, Argerich's performance seems not to recognize the hemiola, accelerating the beginning of the following phrase, with a relatively low nuance.

The second place that deserves a special comment happens from bar 13 to 15, coinciding with the surface hemiola halfway through the piece (figure 5.15). Note the absolutely contradictory tendency between both performers' timing at bar 13 with its *fall* at bar 14.

Clearly, Argerich – as we have already seen as a PC^1 feature in the principal component analysis - emphasises the e^4 (third quaver of each *half note beat*), both lengthening the note and playing it stronger. In doing so, she is bringing the hemiola into prominence. It is important to highlight that this behaviour is not a simple consequence of the way in which she faces the ascending arpeggio, but also constitutes an interpretive strategy for the hemiola, since the third half note is also marked even though it does not display the arpeggio. On the other hand, although Alfred Cortot highlights the first half note of the hemiola, at the end of the second (bar 14.2) he changes the gesture performing the rest of the bar 14 quavers rapidly and equally, as opposed to Argerich. The beginning of the motif *b* in the lower voice at the first beat of bar 15 is also hasty in Cortot's performance while in Argerich's the novelty is manifestly introduced by retaining the first quaver (bar 15.1). Dynamic gestures of both performances accompany these different timing approaches. Argerich plays both arpeggios using the same dynamics (*f* and *cresc.*), conversely to Cortot, who plays much more *piano* the second arpeggio, and reinforces his idea of subtracting importance to the last quavers of bar 14 by diminishing its dynamic level. Moreover, the beginning of bar 15 is, in Cortot's performance, more *piano* and shorter than in the Argerich's. Therefore, bar 14 seems less emphasised as a formal articulation point by Cortot than by Argerich.

Concerning the concluding bars of the piece, where the articulation of the Coda occurs, both artists perform a noticeable *ritenuto* at the beginning of bar 23 (figure 5.16). Nevertheless, this *rit.* is markedly more plentiful in Cortot's performance. Note that he is

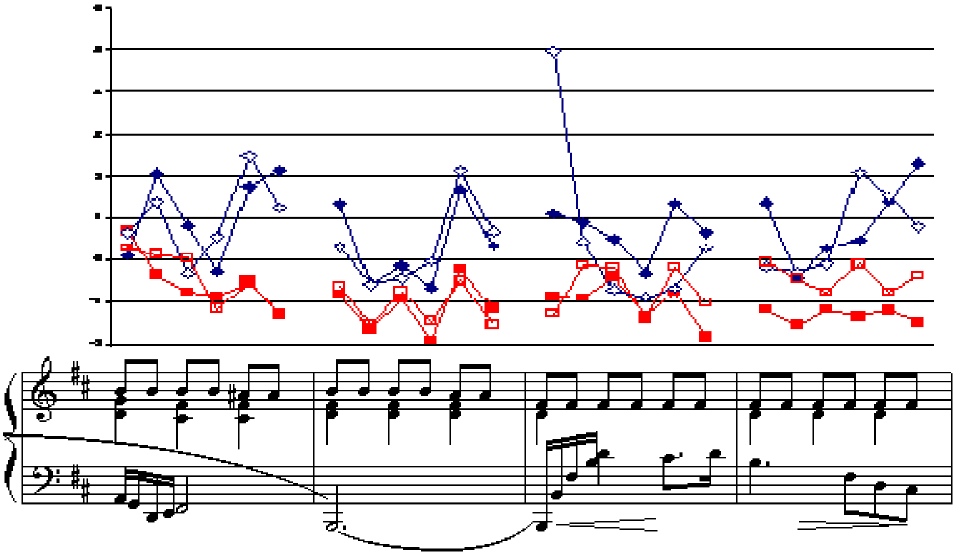


Figure 5.16 *Detail of bars 21-24.*

making the usual gesture in performing the raising arpeggios, but, this time, it is much more exaggerated. He is “pretending” to start again. Argerich's gesture is new instead. The lowest b^1 (bar 22) is dynamically and temporally emphasised by both artists. But Argerich’s is more emphatic: the lengthenings of the previous two notes are the most pronounced of the passage. Her b^1 is, therefore, more conclusive. So the following bars sound reminiscent of the prelude, but being clear that it has concluded yet. Bar 22 displays a noticeable performance similarity between both pianists (in fact, it is the most similar performance of the piece). Both of them dynamically and temporally emphasise the a^4 of the penultimate quaver of this bar. Therefore, they are organising the continuity of the descending arpeggio a^4 (22.3) f# (23.1) d^4 (23.2) indicating a movement toward the main voice (the d^4 of bar 23; see *motivic* reduction in figure 5.3).

As already mentioned, another important similarity at this point is the final expiring process. The separation between bars 22 and 23 takes place in a unified and sustained process that, having begun at bar 19, involves an important decreasing of both tempo and dynamics (figure 5.13). In that way, both artists exhibit a unified line that contributes to making both the fall to bar 23 and the articulation of the 4 concluding bars more ambiguous. Therefore, both artists unify this ending and include the coda into a more widespread process. But it seems that they have different reasons to do this: while for one, the coda is a “pretend” re-starting; for the other it is only a resonance of something that has already finished (the lowest point of the arch).

Finally, concerning the foreground hemiolas at bars 16-17 and 20-21, no artist seems to present a systematic manner of performing them in order to highlight them (figure 5.17). Argerich configures in both hemiolas an irregular dynamic profile without exhibiting either a 6 quaver or a 4 quaver pattern. On the contrary, her timing profile seems

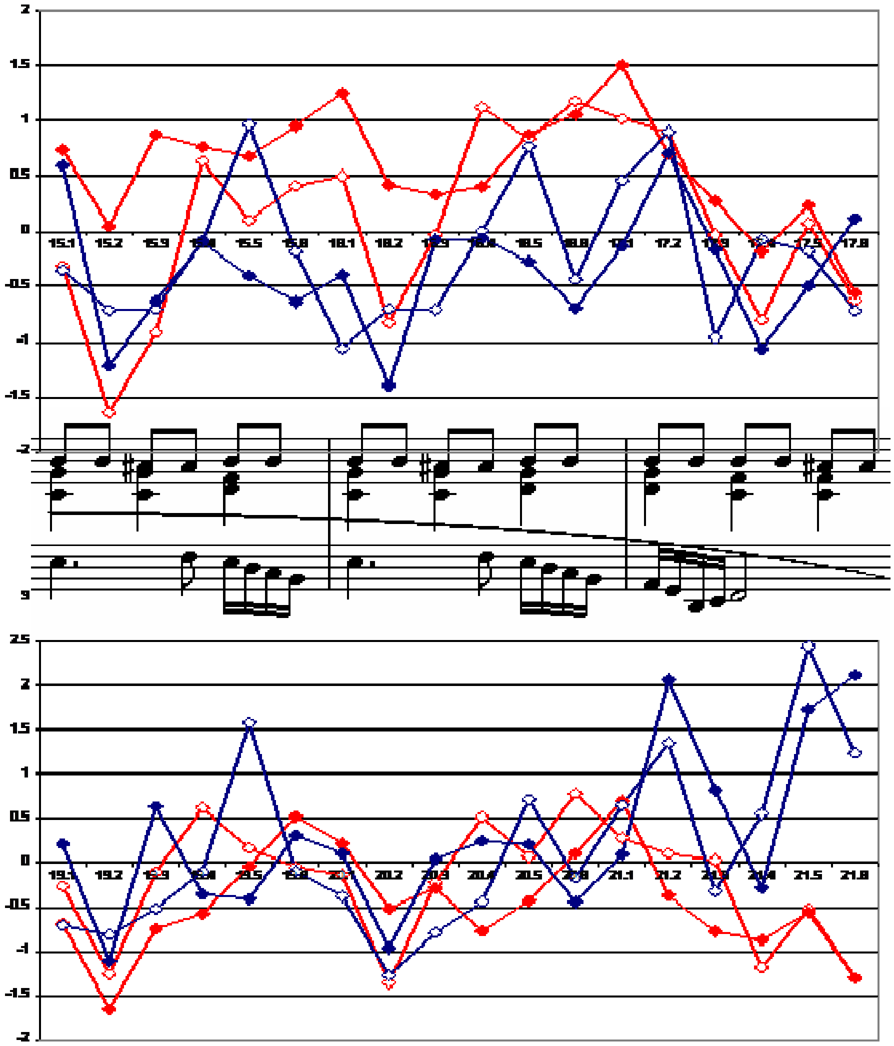


Figure 5.17. *Detail of bars 15 to 17 (upper panel) and 19 to 21 (lower panel)*

to adapt itself to the 4 quaver configuration, even though in a very blurred manner (Factor Analysis revealed three different principal components, therefore the 4 quaver configurations are extremely variable and can be interpreted in multiple ways). For his part, Cortot’s timing and dynamic profiles better match the 6 quaver configuration. This way, Cortot would be detailing the hemiola of bars 7-8 (which may be understood as more structural) and not the hemiolas of bars 16-17 and 20-21 (whose configuration depends only on the inner voices).

5.5 Discussion

The aim of this study of performances was to verify the possibility of linking certain interpretative strategies, revealed through subtle variations of tempo and dynamics, to a convincing structural interpretation of the musical piece. In particular the intention was to find evidence of a bond between the attributes of an expressive music performance and two opposed interpretations of the piece generically denominated *Prolongational* and *Non prolongational.*

Implicit in this account is the postulation that a structural interpretation of the composition offers the performance a solid base on which to outline its originality, individuality and distinguishing characteristics, while still maintaining certain conditions of acceptability. As seen in chapter 2, this postulate comprises the foundations of the performance perspective denominated as *objectivist.* We have seen in the previous chapter that the cognitive approach to music performance has been the key to understanding many of the characteristics by which we recognize a performance as expressive and identify it as *natural*. Although, as we have indicated, the *objectivist* performance tends to diminish the idiosyncratic aspects of an interpretation, in chapter 2 we reviewed that some of the criticisms held against this paradigm circle around a series of aspects that objectivism gives the impression of having ignored. The issues of originality and individuality having transcended the compositional orbit, and settled on the performative field, it is little wonder that performance should be studied in terms of its originality and particular characteristics and not only as regards those attributes of naturalness and expressiveness. Of course, from an objectivist point of view, it is even possible to wait for noticeable interpersonal differences between diverse performances, especially when the composition gives rise to multiple structural interpretations. In such a sense, the itinerary raised in this work would be indicating that the bonds between certain highly sophisticated interpretations of the musical structure (like the *voice leading* analysis) and evident performance traits emerge more clearly when examining idiosyncratic performance particularities. This matter makes itself obvious when considering the methodological path journeyed here. We departed from observing both differences and commonalities of an important number of well known performances of the piece aiming to discriminate those characteristics that are common among the expert performances and make them *naturally* expressive, from those more idiosyncratic traits that make them original and individual musical expressions.

Thus, it was possible to observe that the *average performance* presents a series of typical behaviours that appear associated to characteristics of the music structure (Repp 1998c, 1998d). In this way, and favouring the generative hypothesis, it was possible to identify a standard behaviour in the use of rubato, directly associated to the grouping structure of the piece. This affirmation is congruent with some of the already classic studies that observe the handling of rubato as related to the phrasing structure of the piece (in particular see Todd, 1985). Thus, for example, during the first 8 bars of the studied composition, where the grouping structure is rather *classical* (figure 5.18) the rubato peaks

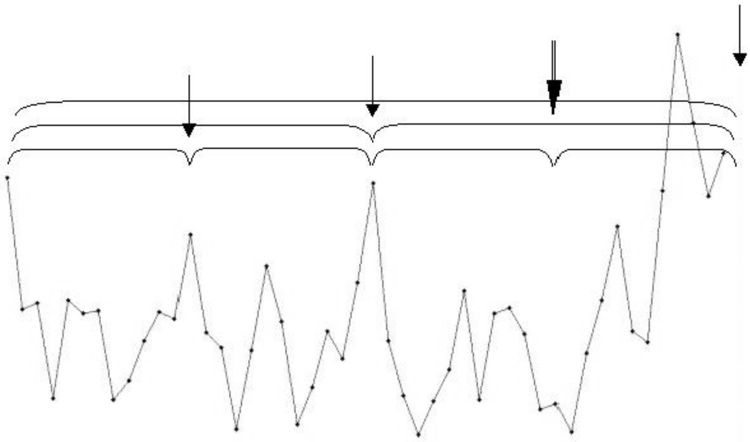


Figure 5.18. *Relation between rubato and grouping structure of the initial passage of the Chopin Piano Prelude in b minor (bars 1-8; each arc at the lowest level represents a two-bars unit)*

(points of greater lengthening of notes) not only appear as indicating the lowest level units but also seem to emphasize the hierarchical nature of the grouping structure. In this way, the highest peak occurs at bar 8, followed by the corresponding one at bar 4, and finally the one at bar 2. From the generative perspective we could enunciate a rule: *phrase end* → *ritardando,* concomitantly with another rule *the higher the phrase hierarchy* → *the greater the ritardando amplitude*.

Nevertheless, a peak expected at the end of bar 6 does not take place (see the largest arrow). Evidently, this point is structurally much more ambiguous than the other articulation points. Structural ambiguity is translated into a sort of malfunctioning of the rule. Curiously, the structural ambiguity is provoked with the appearance of the second motivic element, and the rubato conduct here is the same as maintained during each appearance of such an element (see figure 5.4). From a classical perspective it could be said that in this passage another rule is being put into play *competing* with the first one. In principle, it is much more difficult to find a general way of enunciating this second rule because it does not seem to obey general structural principles but rather, the particularities of this motif. Nevertheless, hypothesizing a sort of fight while applying the rules, the statement of some kind of preference rule can be hypothesized. Let us remember that the preference rules systems were created in particular (i) to solve situations in which two or more rules can sometimes be applied in which neither of the two are necessary conditions but both are condition enough to provoke a given action; (ii) to balance the effects of rules that are applied in conflict.

Something similar happens with the average use of the dynamic resource. Dynamics are clearly used for highlighting the motivic linear progression in the foreground d^4- $c\#^4$- b^4 (and its derivations). Nevertheless the dynamic behaviour when the second motivic element appears in the high register is totally different from the opportunity when it appears in the lower (and again, it does not seem here to be associated to a general structural characteristic either). In other words, it appears to be that the more complex and/or ambiguous the musical structure, the less fitted to rules the interpretative solutions. On the contrary, when the performance gives the impression of being more *typical* or *common* (as seen in the *average performance* analysis, and Maurizio Pollini's performance), it is more difficult to assign clearly it to a certain interpretative proposal. Thus, these performances present characteristics alluding both to the *voice leading* reading and the *surface* interpretation.

When analysing the association of every individual strategy with the *average performance,* an individual intention arising more explicitly in the passages of greater ambiguity was observed. The performances' variability (represented by the standard deviations of the timing and dynamics expressive deviations) was significantly greater in ambiguous than in clear passages. Nevertheless, in spite of its peculiar characteristics, every performance was strongly associated with the *virtual average* strategy. It is possible to think that this association represents a sort of guarantee of acceptability for the performance, a sort of imposition of *intentio operis*. The *composition presence* imposing on the performance a set of constraints relative to its structure, would be guaranteeing the coherence of the performance in structural terms. In other terms, to the extent that a performance is able to obey certain general performative principles that appear culturally relatively codified, a condition of acceptability is ensured. Under this "warranty" the performer contributes his or her personal traits, either clarifying in peculiar ways ambiguous situations, or transgressing *trivial* solutions for interpretative puzzles, or selecting particular characteristics where those restrictions leave space for multiple possible actions, etc. The *intentio operis* prevails in certain points, but it leaves in other places, some interstices for the sprouting of *intentio interpretis* (paraphrasing the *intentio lectoris* of Eco 1990). At least, from an objectivist perspective, we could understand therefore the *individual* nature of performance.

Nevertheless, two details will help us to understand that this *intentio operis* - *intentio interpretis* tension is more complex than it seems at first glance. The first peculiarity arises from the analysis of the actual performance most similar to the *average* (*virtual*), the one by Maurizio Pollini. In his dynamic strategy we could see how he indicates the surface linear progression d^4- $c\#^4$- b^4 when it appears but the artist soon leaves it. Something similar happens with the timing strategy of the first 8 bars. Although Pollini demarcates the two bar phrases, lengthening the notes at the beginning and the end of every one, the question of the grouping hierarchy does not appear so clearly (see in figure 5.7 that the bar 2 articulation is retained more than the one at the end of bar 4). We could say that Pollini, as an expert artist, *knows* the rules, nevertheless, *he enunciates them* and then transgresses them. If all the artists act this way, and if *transgressions* by definition are not obligatory, then it is expectable that the *average performance (virtual)* be more systematic than any *individual real* performance.

The second detail has to do with the differences in the observed dispersions comparing clear and the ambiguous zones (table 5.3). We had inferred that, at least as regards timing, the famous artists seem to use more idiosyncratic strategies in the solution of more sophisticated interpretative problems. In other words, for ambiguous passages there seem to be less available standard strategies. But we also saw that this imposition of *intentio interpretis* also appears as highly systematic. When analysing the different Alfred Cortot performances, a high association among the different recordings that he did throughout his life was found. Interestingly, Cortot does not show any association with other pianists as high as those with himself. The permanence of Cortot's expressive variations throughout long years, compared with more important differences between Cortot and any other pianist, render an account of the existence of a personal component that goes further than music structure attributes and can be held all through the years. One of the supporting arguments of the generative approach to music performance is "*the ability to replicate the same expressive timing profile with very small variability across performances*" (Palmer 1997; p. 126). Nevertheless, whereas the generative hypothesis maintains that the higher systematic quality in the answers of the performers takes place around typified structural characteristics whose relation with certain performance actions may be codified more or less directly, the high consistency between the three Cortot performances appears exactly in those structurally less clear passages. In this case we should think about a personal *grammar* or at least in a set of rules ample and flexible enough for guaranteeing the imposition of *intentio interpretis* governing both the stability of an interpretation considered typical for certain artists and its endurance in time.

Up to here, nothing moves away too far from the most traditional objectivist perspective, by which the performer's creativity has space to be developed, as Kivy (1995) affirmed, only in the interstices that the composition (the composer) has left free. Nevertheless, it is necessary to consider some data more deeply. The first question comes from the results of the factor analysis. In it, two factors, one representing the three performances of Cortot and the other identified with the rest of the performances, were abstracted. Although the set of investigated performances is limited and, therefore, all speculation turns out to be uncertain, it is possible to think of the differences in the Cortot performances as not simply reflecting the artist's idiosyncratic characteristics, but as gathering some generational aspects that account for a performative style proper for his time. Curiously, the 1934 performance (the oldest) is the one that presents smaller associations with the average in clearer zones than in more ambiguous ones. We could speculate that in Cortot's time, in particular in that of his first performance (notice that it was recorded in the inter-war period), the preoccupation did not focus on problems of structural clarity or ambiguity, and therefore the performer *creativity fields* were other, different ones from those *interstices* left by structural indetermination. This shows the existence of other tensions that come from the performance style *accepted* at a certain time. These tensions challenge the generative paradigm postulates. It is possible then to speak about an *intentio èpocha* characterized by the set of forces woven with the thread of history, cultural habits, audiences tastes, record market tendencies, etc. Also, this tale of tensions and intentions makes matters more complex when considering that more contemporary performances are also under the tensions of that epoch, indirectly through this prelude's performance *history*, that in turn restricts, performance by performance, the conditions for the subsequent performance's originality. In this point, *intentio èpocha* is combined with *intentio interpretis* making those *creativity fields* flexible. It is possible that the Vladimir Ashkenazy performance, which just as the 1934 Cortot performance, turned out to be more *original* as regards clear zones with respect to ambiguous ones (see table 5.3), may respond to this tendency.

From what has been seen, it would appear that the relation between *that which is common* and *that which is individual* in performance was crucial for the study of the communication of sophisticated structural configurations. Such is the case of the *voice leading* and *prolongational structures,* which, almost by definition, involve interpretative matters (see pp. 73 and ff). The journey here has gone from the analysis of the commonalities towards descriptions of the more and more individualized performance actions. In this path it could be corroborated how systematic quality (one of the generative paradigm pillars) in the structure-performance bonds goes progressively loosing as we go deeper into originality and study performance individuality in detail.

In this scrutiny of individuality it became more and more difficult to univocally tie an expressive strategy to a composition's structural characteristics (a certain *intentio operis*). Thus, for example, Cortot and Argerich lengthen notes with apparently different aims. However, affirming that this contradicts the systematic character that gives support to the generative hypothesis is an epistemological absurdity: the true interest of cognitive psychology is to understand mental operations, its development, regularities and anomalies. As in other scientific disciplines, it has focused on generalization. In this sense, the search of commonalities has been its methodological aim. Nevertheless, even with regard to the standard behaviours, the allegiance of a given performance action to a particular structural characteristic is also problematic. For example, the average performance showed how a lengthening in the second thematic motif was fulfilling a different role from the one of indicating a boundary between groups.

On the other hand, it is easy to notice that the musicological interest has more variable purposes. Besides understanding general processes, musicology is interested in explaining the individual, particularly if the individual incarnates itself in an artwork and if what is considered individual can also be communicated and be shared within a certain scope of incumbency.

At this stage of the study, the central question of this research can be explicitly formulated expecting the answer to support an objectivist perspective of performance: Is it possible to think of a rule system, or a combination of rule systems, schemata, or other types of formalized structure that is able to account for the delicate balance that appears to exist between the multiple tensions in an expert performance? And, in that case, would that formal formulation be parsimonious enough as to grant itself priority before other explanatory models? It is possible to think that, just as the more sophisticated the music listened to, the greater the computational demand involved for its processing on behalf of the listener (Jackendoff 1983; p.139); so, the greater and more diverse the tensions on which the performance of a highly sophisticated musical work depends on, the greater the computational devices in use should be. Could this greater demand explain in psychological (computational) terms the difference between standard and supreme performers?

Although much investigation in the field is needed, with the data collected here we can initiate a reflection on this topic. Let us begin with a paradox. Mauricio Pollini has been considered a pianist with a very rich *dynamic palette* (see for example Distler, 2006). Nevertheless when analysing his performance of this prelude, it has been observed that his performance's dynamics do not give rise to as strictly systematic patterns as those that are possible to find concerning timing. We could *a priori* speculate that his dynamic handling originality rests on that strictly systematic temporal handling. Thus timing and dynamic would demand to be interpreted in cooperation. Something similar emerges from the Argerich and Cortot performances. Figure 5.13 clearly exhibits diverse ways of relating timing and dynamics. Observe the difference between the joint treatment of both attributes at bars 8, 13-14 and 22. At bars 8 and 22, *ritardandi* are accompanied by dynamic *diminuendi*. At bar 13, the *ritardando* is accompanied, in the Argerich performance, by *crescendo,* while the accelerando in the Cortot performance goes together with an important decrescendo. Thus, timing and dynamics appear as compensatory in certain occasions and as supplementary in others.

The great diversity of circumstances in which a certain expressive pattern is used as well as the infinite combinations of expressive attributes encourages an examination in which their use can be described transcending their local description. In this way, it would be advantageous to analyse each action in context within a set of operations as a whole in order to consider how those multiple tensions are resolved through the usage of these multiple expressive resources. As proposed by Clarke (1995), from this point of view, each expressive deviation acquires a contextual meaning. In other words, a certain action in performance acquires its meaning by virtue of the way in which it is related to its context. Context can contribute to identify structural content expressed through performance actions (Bertucelli Pappi 1993). For that, the performance actions require to be interpreted by virtue of their *contextual relations.* At the moment we will only outline a preliminary approach to the analysis of *contextual relations* in performance attributes in order to identify expressive characteristics allowing to verify the hypothesis 1 and to recognize a certain performance either as *prolongational* or as *non prolongational*. In the next chapter the idea of the interpretative context analysis in the communicational process will be looked more deeply.

Performances of bars 22/23 both in Argerich’s and Cortot’s performances bring out the importance of analysing expressive deviations as regards their *contextual relations*. According to a simplistic view, this position in the Prelude should be considered as the articulation point corresponding to the highest structural level, because the most pronounced *ritardando* can be observed here (in particular concerning Cortot's performance). However, if this *ritardando* is analysed as part of a more global - future oriented - process that grows from bar 19 to the end and involves a particular behaviour of the inner voices (the arpeggio a^4- f#^{4} – d^4 at bars 22/23), it would be possible to evaluate whether the pianists intend to capture the ambiguity of this passage concerning the structural functions of segmentation and continuation. Thus, this *ritardando* acquires a slightly different meaning to marking a phrasing segmentation, consisting in trying to highlight the formal ambiguity of the passage as a *dramatic* feature. That is, this extended *ritardando* should not only be seen as a way of indicating the end – as a simple rule would indicate – but as having another connotation rising from a configuration of the piece as a whole. According to some authors, this configuration could be drawn from narrative – or dramatic – content (Shaffer 1992, 1995; Schmalfeldt 1985).

A peculiarity of this interpretative approach is the fact that, since it involves music performance, contextual relations are *bimodal*. On one hand, there are *structural contextual relations*, namely, those relations that give meaning to an attribute of expressive microstructure (for example a *ritardando*), by attending to the particular attribute of musical structure to which it is associated (for example, the *ritardando* that has just been commented upon.)

On the other hand, it is possible to talk about *microstructural contextual relations*, namely, those relations that allow assigning meaning to an attribute in terms of expressive microstructure by attending to a particular attribute of musical microstructure to which it is associated. An example of this can be seen in the Cortot's performance of bars 13 and 14. The second half note of the hemiola is played with a dramatic dynamic contrast. Viewed in another context, this contrast could be simply justified by the motivic iteration. However, in this context, this feature appears followed by a speed increment of the quavers belonging to the third half note of the hemiola. Since this acceleration gives a sense of continuity, the dynamic change is "re-signified" as part of this intention to maintain the continuity of the passage.

A sort of combination of both modalities of relations allows understanding Argerich's performance as *non prolongational.* She makes the ritardando that clearly indicates the interrupted form articulation at bar 8. Nevertheless, her most important ritardando appears at bar 13, where the surface phenomena are more appealing and important. The relation of that slowing down with the maintaining of the forte dynamic in the second arpeggio – a *microstructural contextual relation* - establishes a different *structural contextual relation* (the relation with the surface phenomena) from that established at bar 8, in which the ritenuto is related to the interrupted form. In other terms, would we have to think that Argerich is thinking of a phrase end at bar 13? Applying a rule that does not consider *contextual relations* this question would be answered affirmatively. But a careful examination of the situation leads to consider that she is emphasizing the vertex of the great arc including the entire prelude (considering the *surface* interpretation). Consequently, it is possible to say that Argerich's performance may be understood as *non prolongational.* On the contrary, Cortot's performance displays its greater ritardando at bar 8 with a clearly additional dynamic pattern. These contextual relations contribute the evidence that allows us to say that it is a *prolongational* performance. We have seen that when considering the expressive actions in context we are able to approximate ourselves better to the idiosyncratic particularities of each performance and in this way we may give some support to the notion of the piece as object of multiple readings – notion in fact established through the numerous accepted performances of the piece that we may enjoy today. In the particular case presented here, one reading outlined a narrative departing from a series of surface phenomena (registral expansion, metrical irregularity, motivic iteration, etc.). The other reading rescued attributes of the deeper musical structure (particularly, ignoring the attributes of the musical surface in order to highlight the characteristics of the underlying voice leading).

However, both performances are avoiding an explicit *explanation*. Apparently, they do not intent to show these components overtly by projecting them directly on the microstructural surface. Contrarily, each performance presents its attributes (particularly timing and dynamics) as a coherent whole, which is manifested in a particular projection of the general organisation of the piece. Consequently, the manifestation of the underlying voice leading by Cortot does not consist of bringing out - *singing* (in pianistic jargon), making obvious – the notes of that voice leading, but of reorganising groupings in order to define a clear formal articulation at bar 8. *To sing the voice leading* notes would have been a trivial strategy, a commonplace (as we have seen in the *average performance* projection of the foreground linear progression, d^4- $c\#^4$- b^3 and on, through use of the dynamics). An *original* performance, that truly represents an original contribution to the work, will have by definition to avoid the trivial solutions. Therefore, the idea of observing a *prolongational* performance as idiosyncratic unavoidably makes us think about non-trivial strategies of organization of performance attributes around the prolongational structure.

Just the search for non-trivial strategies is what differentiates the average performance from Pollini's performance. Its dynamic strategy begins with a clear emphasis in the foreground linear progression d^4- $c\#^4$- b^3 at bar 1. Taking its expertise into account in the dominion of dynamics, if his intention had been to indicate those linear progressions (characteristic that might have been tied to a hypothetical *prolongational* performance) he would not have had any impediment to maintain the dynamic strategy in the following linear progressions. Nevertheless, he soon abandons this behaviour. The fact that the average performance maintains that conduct accounts for an obvious and excessively banal solution. As such, by definition, this solution would have gone against any sense of an individual and original performance. In this way, attenuation of the multiple tensions crossing the performance field seeks to be solved in performances by outstanding artists in very idiosyncratic ways eluding the obvious associations and trying out more creative configurations (in the third part we will venture some descriptions of the way in which these creative processes may take place).

Accordingly, data raised from the analysis of expert performances seem to vindicate that a musical interpretation, particularly at higher levels of performance, is not the mere result of corresponding a performative gesture to a given structural characteristic. On the contrary, the performer would interpret the structure as a unity, giving way to a global configuration of the attributes of his or her performance, making use of a myriad of microstructural gestures. In that way, a performative grammar seems to be insufficient to explain the most sophisticated, idiosyncratic and original performances. This is so because the performer's contribution to the analysis, the description of structural attributes, the interpretative decisions and the representation of the performance as a whole, unavoidably alter, as a result of the imposition of his or her intention –and we could even include the *intentio èpocha* mentioned earlier (p. 173)- some features of the structure and their projection. The performer's interventions update the relation between the work and the listener, since the performer would be acting based on what he or she presumes the listener to think or know in the moment of performance. In this sense, it is possible to say that the performer's labour consists of making a cooperative contribution to the meaning of the musical piece.

In the next chapter a series of listening experiments will be described. They were carried out with the intention of examining such a projection of the structure and its reception on the part of the listener.

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Summary. The study presented in this chapter aimed to identify two different interpretations from a single composition. One of them was considered as *prolongational* and the other as *non prolongational*. The composition, Chopin's *Prelude in B minor*, clearly offers the possibility of different interpretative readings according to whether one considers either surface or prolongational aspects. Commonalities and differences were observed in a number of well known performances, and features of common expressivity and originality were discriminated. In this way the general strategy consisted of going from the description of common *expressive behaviours* to accounts of more particular and idiosyncratic ways of approaching the piece. The identification of *standard behaviours* through the description of *average performances* and the factor analysis of principal component, as well as the identification of particular strategies for the resolution of structural ambiguities, allowed observing that only the most general aspects of the performances can be explained through rules that link performance actions to certain structural particularities. In order to provide a general explanation of the set of performative actions a *contextual* interpretation of those actions was proposed. From this, it is possible to argue that an idiographic, descriptive perspective may contribute to a *generative* analysis by identifying (i) contextual relations between performative actions and the structural context of the piece (*contextual structural relations*), and (ii) contextual relations between different performative actions throughout the performance itself (*microstructural contextual relations*). Finally two performances (Cortot, 1934; and Argerich, 1977) were identified as *prolongational* and *non prolongational* respectively.

Chapter 6: Communicating the musical structure to the listener

6.1 Introduction

In the previous chapter, music performance was seen as an interpretative process in which performative decisions were promoted by contextual needs. In the reported study, the method firstly consisted of carrying out two different readings of a composition as specified in a score – the Chopin prelude in B minor. Secondly, it was suggested that the study of musical performances can draw near the performer's intention on both the features of that musical structure and the idiosyncratic standard performance style corresponding to the moment of performance, through the analysis of *contextual relations*. After revealing how difficult it was to explain the particularities of expert performances based only on performance rules, it was proposed, in an embryonic fashion, another explanation that could include the study of multiple tensions altering the ontology of the piece, based on setting both *structural* and *microstructural contextual relations*.

In this chapter the continuation of this study is presented, intending to examine the other link in the communicational chain: that relating performance to the listener. It was hypothesized that: "It is possible to describe rules or principles that regulate communication between performer and listener, by which the latter is able to discriminate *prolongational* from *non prolongation* performances by making use of different types from representations" (Hypothesis 2, p.121).

In that sense, the studies presented in this chapter intend:

(i) To verify the extent to which the contents seem to govern the analysed performances are communicated to listeners; in that sense it is necessary:

a. To investigate various kinds of representations provoked in the listener by the reception of different performances of a same composition.

b. To analyse whether the listeners' responses, elicited by the different performances, can be associated with their being either *prolongational* or *non prolongational.*

(ii) To discuss the pertinence of generative principles in the context of distinctly noticeably personal performances, and in reference to particularly sophisticated structural aspects.

The experiments presented here represent different paradigms which are intended to investigate the nature of listeners' representations that different performances of the selected piece elicit. Two different experiments are described in which subjects had to complete a series of tasks by listening to stimuli. In addition to the tasks, the fundamental difference between both experiments relates to the treatment of the stimuli. In experiment 1, the stimuli consisted of the selected performances. On the other hand, in experiment 2, the stimuli came from the manipulation of the selected performances by interpolating cuts and noise. In this way both experiments revolved around listening to the Alfred Cortot (1934) and Martha Argerich (1977) performances of the Chopin piano prelude in B minor Op. 28 N° 6. According to the analysis in the study presented in the previous chapter, the Alfred Cortot performance may be considered to be a *prolongational performance*, this is, a performance whose conspicuous characteristics may be associated to the prolongational structure analysis of the piece. On the contrary, the Martha Argerich performance may be considered *non prolongational*, because its more characteristic traits may be tied to a *non prolongational* (surface attributes) interpretation of musical structure.

6.2 Listening experiment 1: non-manipulated stimuli

6.2.1 Aims and methodological background

Experiment 1 consisted of three parts. In each one of them, subjects had to listen to the corresponding stimuli and perform a given task. The three parts of the experiment were successive and they were run in a single session. The complete session lasted around 40 minutes.

The purpose of the first task, *segmentation*, was to test a *generative* hypothesis according to which the listener *interprets* a performance in compliance with codes that link expressive deviations to attributes of the musical structure (Sundberg 1993; Sundberg, Friberg and Fryden 1991). For example: a *ritardando* marks the boundary of a grouping unit (Clarke 1988) and the more pronounced the *ritardando* the higher the structural level this unit represents (Todd 1985). If so, listeners would tend to segment the Chopin Prelude differently according to the performance listened to. If listening to Cortot's performance, for example, they would tend to segment more at bar 8. Contrarily, if listening to the Argerich performance, segmentation at bar 13 would be more expected. In order to study this, a double segmentation experiment was carried out. As it will be seen, the experimental paradigm of double segmentation allows studying a possible hierarchical segmentation of the piece both from a statistical point of view and from an individual conception of this hierarchy.

This part of the experiment is based on the idea that segmentation tasks are not only a logical operation used in music analysis, but also account for an actual perceptual process. This means that although musician subjects are systematically trained in logical segmentation procedures, it is possible that a task of this nature captures important attributes of the representation elicited by the listened work. According to Imberty (1981) we can say that segmentation, like a possible observable subject behaviour provoked by the entire or part of the musical structure, is based on the perception of qualitative changes in the attributes of the perceptual input. Moreover, segmentation depends on both cultural reference models and codes and previous knowledge, lodged in long term memory throughout enculturation processes (p. 86). In this way, segmentation processes can account for the way in which the musical structure comes to be codified. Most importantly, this experiment supposes that the characteristics of the performance take part in such forms of codification. Moreover, if the process of segmentation has to do with Gestalt principles (as Dèliege 2002 asserts), then it is possible to assume that prolongational structure will play and important role in such a process, since it would be contributing to the piece's *well formedness.*

At the same time, segmentation may refer to different levels that can be understood as constituting a hierarchy (Imberty 1981). Thus, it is possible to think of a macro segmentation (*highest level segmentation*) and a micro segmentation (*lowest level segmentation*).

Generally, the segmentation paradigm is accompanied by other methodological devices such as verbal reports (Imberty 1981, Dèliege and El Ahmadí 1990), continued responses judging amount of tension, new ideas (Krumhansl 1996; Krumhansl and Schenck 1997) and/or emotional engagement (Timmers *et al.* 2006). This procedure supposes that people without formal musical training related to theories of logical segmentation can fulfil the task. Particularly, this paradigm is advantageous when the focus is put on temporally extended stimuli and their time organization.

According to previous studies, which combined segmentation task with more qualitative data (Imberty 1981, Dèliege and El Ahmadí 1991) the second task consisted of a register of free semantic responses (verbal reports). As it was seen, music performance, as a communicational agent, is being exhaustively studied. Specific literature includes at least four basic research lines that comprise the communication of: (i) structural attributes (in terms of music theory); (ii) emotions; (iii) narrative content (in terms of either character features or story plots); (iv) motional, gestural and kinetic content. Most of the studies that examine music communication in terms of music theory, emotions, motion, etc. are dealt with using experimental paradigms that involve structured protocols. Such research instruments can report whether communication occurs in the examined terms when the listener is interrogated by these protocols. That is, they do not account for the effects they cause. The study of the content of the communicational experience becomes crucial when the attributes, intended to be communicated in performance, demand a high level of abstraction. This is the case of the underlying voice leading, which, bearing its complexity and level of abstraction in mind, could give rise to content of a different nature.

The purpose of this part was to inquire into general categories related to the nature of the listener's experience while listening to a *prolongational* performance as opposed to listening to a *non prolongational* performance, without any particular (forced) focus. Although this data was examined by means of a *content analysis*, the complete analysis was not presented here, due to the interpretation of this data being more problematic (especially under an objectivistic paradigm). However, as some information will be used in the discussion and the task was an important part of the procedure as a whole, a brief explanation of the procedure will be included in order to understand the context of the third task. A complete analysis of this task is included in Shifres (2002).

As the second task would provide some information about the representational modality to which the listener is referred when not particularly oriented to any one in particular, listeners were not oriented to focus on performance features. In fact, several subjects wrote very similar (or equal) descriptions for both versions, probably because they did not focus on the performances' attributes. With the aim of complementing task 1, a comparison task (the third task) was carried out inquiring into the representational modality that might be more activated when concentrating on purely the interpretative attributes.

6.2.2 Method

6.2.2.1 Subjects

Thirty four musicians (12 females, and 22 males) took part in the experiment. The average age was 28.2 years; and average length of musical experience was 12.8 years. Thirteen of them were pianists, twelve guitarists, three singers, two choir conductors, one saxophonist, one orchestral conductor, one composer and one flautist. As the data was collected in Argentina, all the subjects were native Spanish speakers.

6.2.2.2 Stimuli

The stimuli were the complete performances of the Chopin piano prelude in B minor Op. 28 No. 6 by Martha Argerich (1977) and Alfred Cortot (1934). Although some subjects stated that they knew the piece, nobody could identify it as a Chopin Piano Prelude and nobody could identify either of the pianists.

For the third task seventeen adjectives were selected from several sources in musical literature and they were analysed according to two dimensions. Dimension 1 refers to Representational Modalities. According to this dimension, adjectives were classified in four categories: (i) musical structure; (ii) emotions; (iii) motion (gesture); and (iv) anthropomorphic attribution (related to drama). Dimension 2 refers to sources in Literature about music (multiple approaches to music). Thus, adjectives were grouped into four categories: (a) common to Schenkerian literature (Schenker 1935; Salzer 1962; Salzer and Schachter 1969); (b) common to performance studies (Berry 1989; Stein 1957); (c) common to *amateur music analysis* literature (Carpentier 1980); (d) uncommon in music literature. Table 6.1 displays the seventeen adjectives indicating their corresponding category according to both dimensions.

Adjective – Spanish	Adjective – translation	Dimension 1 Category	Dimension 2 Category
Amable	Kind, gentle	iv	B
Apasionada	Passionate	ii	C
Cantable	*Singable*, *cantabile*	i	A
Clara	Clear, unmistakable	i	A
Falsa	False, faithless	iv	B
Femenina	Feminine, female	iv	D
Impulsiva	Impulsive, impetuous	iii	B
Inmóvil	Motionless, rigid	iii	A
Integrada	Integrated, assembled	i	A
Íntima	Intimate	iv	B
Lánguida	Languid	iii	B
Melancólica	Melancholic	ii	C
Optimista	Optimistic	iv	D
Orientada	Oriented	iii	A
Rítmica	Rhythmic, rhythmical	i	C
Tierna	Tender	ii	C
Triste	Sad	ii	C

Table 6.1. *Adjective list of seventeen terms used for the comparison task (third task). See the text for an explanation of the categories.*

6.2.2.3 Apparatus

The stimuli were downloaded from the commercial CDs in *wav* computer format for their analysis. The stimuli were played by the computer. All the parameters (sound level, balance, equalization, etc.) were constantly maintained for both recordings. Subjects listened through headphones directly connected to the computer sound card.

The first task was registered using the same software, which allows registering the subject's actions as it displays on the wave graph's envelope the exact moment when a given key is pushed.

6.2.2.4 Procedure

Task 1: Subjects were asked to listen to one of the performances of the Prelude with the instruction of indicating its segmentation *on line* (by pushing a button on the computer's keyboard whenever they heard the end of a unit) according to two different and successive requirements:

1) Attending to the piece's highest hierarchical articulation points (*highest level segmentation*)
2) Attending to the piece's lowest hierarchical points of grouping articulation (*lowest level segmentation*).

Initially, the meaning of the different levels of segmentations were explained to the subjects using firstly an analogy with verbal language, and secondly a warm up example (the Chopin piano prelude in A major op. 28 N°7, performed by the same pianist, either AC or MA, of the test example (example 16 in disc). Subjects had to complete this warm up task successfully before starting with the test task.

Before fulfilling the task, they were allowed to familiarize themselves with the piece by listening to the performance as many times as necessary (at least once). Only when they were sure of their answer was the software for registering responses run.

Subjects were in front of the computer's keyboard, without seeing the monitor. After fulfilling both requirements, they were asked to complete a questionnaire related to their musical background.

Task 2: According to a non-structured protocol, the 34 musicians had to write down, freely, their impressions during the listening of the performance of the prelude during task 1. They were allowed to listen to the piece as many times as needed. They did not have any time restriction to complete the task, number of words, kind of writing, style, etc. After that, they were asked to do the same, on another sheet of paper, with the other performance. They were not told any information related to the fact that it was the same piece, a different version, or whatever else might bias the experience, and no directions related to the comparison of both versions were given. Similar free conditions of writing were offered in this case.

Task 3: After performing the first and second tasks, subjects were asked to complete a protocol in which they were to compare both versions in terms of an adjective list provided by the computer monitor. The monitor displayed the first adjective, for example *"happy"*. The task consisted of indicating in a 7 point scale *how much happier is the second version you listened to compared to the first?* The scale points were minus three (*much less happy*), minus two (*less happy*), minus one (*slightly less happy*), zero (*similarly happy*), one (*slightly happier*), two (*happier*), and three (*very much happier*).

After writing this judgement down, by pressing a key, the monitor showed the following adjective. The monitor also exhibited two icons representing both versions, clearly identifiable. Subjects were permitted to listen to both versions as many times as they wanted, in any order, by clicking the corresponding icon.

6.2.2.5 Design

For the first task 18 subjects listened to Alfred Cortot's performance (condition A), and the other 16 listened to Martha Argerich's (condition B). All of them carried out both conditions for the same artist.

For the second task, the 18 subjects in condition A listened to the Cortot performance first (as they came from task 1), and the Argerich one next. Contrarily, in condition B, the 16 subjects listened to Argerich's performance followed by Cortot's.

For the third task the 17 item adjective list was presented in randomised order.

6.2.3 Results and discussion

6.2.3.1 Segmentation task

Firstly, a simple quantitative analysis was run. Concerning requirement 1 (First listening: *highest level segmentation*) the subjects indicated an average of 1.56 segmentation marks throughout the entire piece for the AC performance, whereas for MA's performance, the segmentation average was 1.81. Nevertheless, this difference was not significant. On the contrary, for requirement 2 (Second listening: *lowest level segmentation*) the average was greater for the AC performance (13.17) than for the MA one (9.56). This difference was marginally significant (p=.021 ($F_{[1-32]}$=5.884). On this matter, there is an unusual finding: 9 is the number of "arcs" into which we could divide the piece according to the "surface" analysis made in the previous chapter, whereas 14 is the number of outstanding points in the voice leading analysis of the background (see figure 5.2). Nevertheless, this relation is highly speculative and any other conjecture would need more investigation.

The number of segmentation marks per bar was computed (because the instructions did not include any reference to do it "as fast as possible", analysing the marks by counting them by temporal units lesser than a quarter note, would be very uncertain). Each unit (bar) was considered from the third quarter note of each bar to the second quarter note of the following bar, due to the phrasing's characteristic overlaps. Considering the units in this way was judged more pertinent, since it would allow greater clarity when evaluating segmentation strategies. To each segmentation mark a value of 1 was ascribed, and when there was no mark a value of 0 was given. The *chance level* for the statistical calculation was considered as the total number of segmentation marks divided by the number of bars in the piece (25). This *chance level* was calculated for each performance and each task requirement.

Frequencies of segmentation marks are displayed in graphic manner in figures 6.1 and 6.2, representing experimental requirements 1 and 2 respectively. In order to give clear descriptions, figures also display graphical analyses corresponding to both timing and dynamics of Cortot's (above) and Argerich's (below) performances, which were presented in figure 5.14. The bars in the central graphs display the percentages of observed segmentation mark frequencies for every bar. Due to the described structural ambiguity existent at every other bar (the elisions), each bar in the graph represents the registered segmentation marks from the second quaver of each bar to the first quaver of the following bar. In any case, the graph has to be read in a flexible way, since the listener often took a considerable amount of time in giving the response.

Concerning the results for the *highest level segmentation*, a generative hypothesis would predict significant differences at bar 8 with higher scores for Cortot's performance than for Argerich's. Nevertheless, this was the only position in which the segmentation frequencies were significant for both performances, and in addition, the differences between them were not statistically significant. It is easy to admit that the marks that fell within bar 9 correspond to the articulation at bar 8 (in the position where the structural

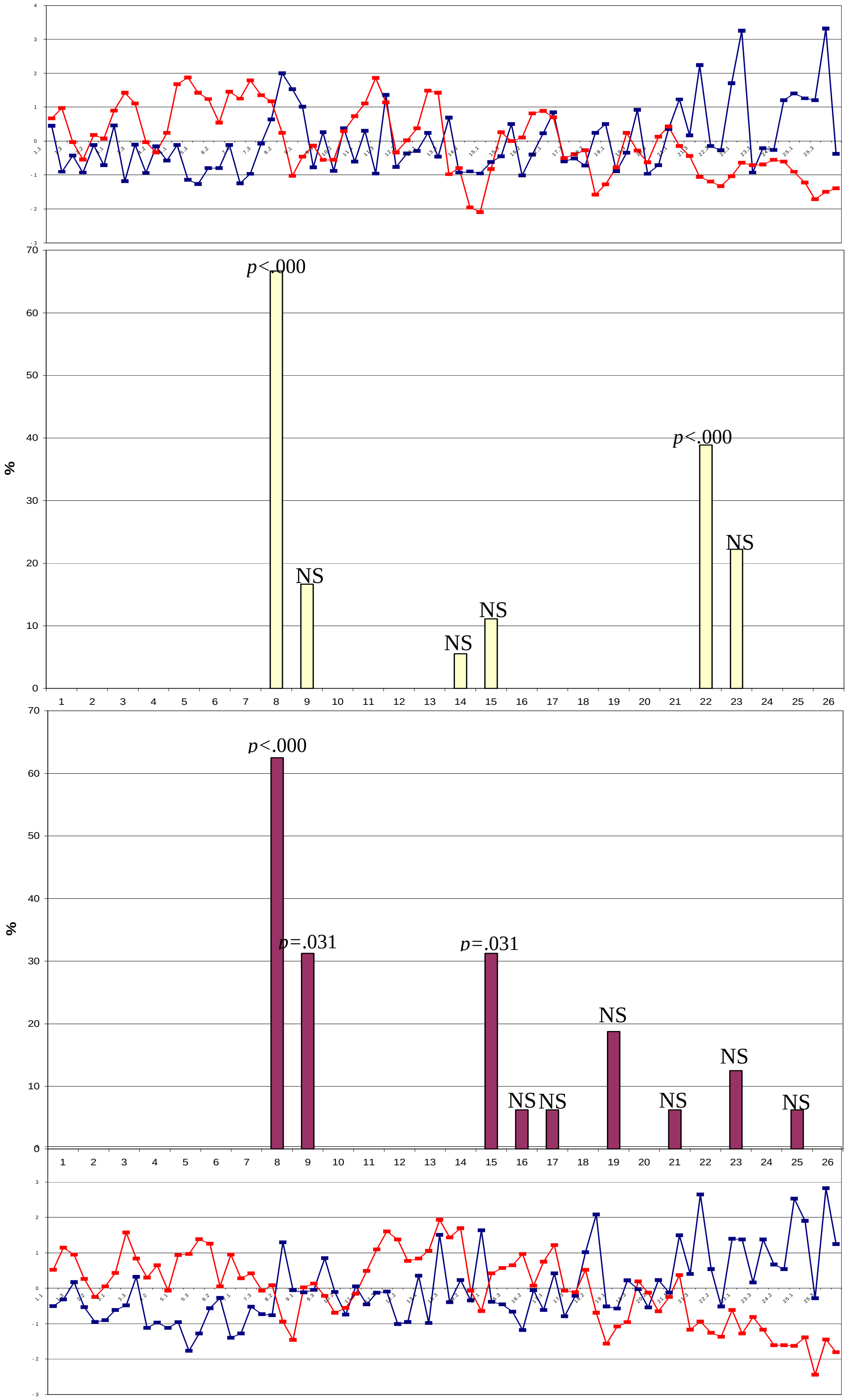


Figure 6.1. *Highest level segmentation of A. Cortot´s performance (upper panel) and M. Argerich´s performance (lower panel)*

interruption occurs). However it is possible to wonder whether there may be some relation between that delay and the microstructural differences observed in the performance study (see chapter 5). In other words, that delay may be associated with the extra time needed for greater certainty before giving an answer. It would be possible to hope that a more pronounced ritardando anticipates the answer. Therefore a smaller response time for the AC performance may be predicted. Thus, the time used by the listeners to give their responses in this point was calculated. The exact moment of the fourth quaver onset at bar 8 – the interruption articulation point, where the $\hat{2}$/V before the interruption arrival takes place – was taken as the reference point. Contrary to what was expected, the mean response time was higher for the AC performance (3.09 seconds) than for the MA one (2.39 seconds), whose difference was marginally significant ($F_{[1-28]}$=5.165; $p = .031$). Clearly, this contradicts the prediction. Nevertheless, because what is being measured is *response time* (as opposed to *reaction time*, typical in experimental paradigms in which subjects are asked to give their responses as soon as possible) it is possible to speculate that this is also tied to the time configuration of the work in that position. In other words, if the performance gives rise to there being more time between phrases, the listener could take more time to respond as a natural manner of matching the performance time. For that reason the response time as a proportion of the total time of bar 8 of each performance was calculated. In this way, the difference between the onset of the listeners' mark and the fourth quaver onset was calculated first. Time responses were next expressed in terms of the proportion of bar 8 (in each condition), and were denominated *proportional response times*. Averages of the proportional response times were compared. This time it was demonstrated that the response time for the MA performance was slightly longer (.682) than the mean for the AC performance (.653). This difference, however, was not significant.

In spite of the similar segmentation at bar 8, it is interesting to emphasize the other significant marks (figure 6.1). These are the responses corresponding to bar 14 (the vertex of the arc) for MA's performance, and the marks corresponding to bar 22 (the fall to the final tonic, and the articulation with the coda) for the AC performance. Both positions basically fulfilled the prediction. With respect to the MA performance, significantly segmented at bar 15, it is possible to say that, without a doubt, these marks correspond to the position indicated by the analysis at bar 14 (just as responses at bar 9 were considered). Even so, contrary to what the length of the ritardando predicts, the frequency of segmentation marks in this position is significantly smaller than that observed for bar 8 ($p = .001$). Although for the AC performance the segmentation marks in that position were not significant (even considering the marks for bars 14 and 15 all together), the difference of segmentation marks between both performances at this position were not significant either (p=.248).

Concerning segmentation at bar 22, it is clearly observed that the AC performance was significantly more segmented than the MA performance ($\chi^2_{(1)}$= 7.666; $p = .006$; also considering the marks at bar 23, similarly to bars 8 and 14). It can be observed that Argerich's interpretation is felt as being more unified, as predicted in the previous analysis: according to a surface view, this cadence is only a point in the context of a more globally recessive process from the vertex of the largest arc to the end. On the contrary, the AC performance leads to a more segmented region. Listeners of his performance would be segmenting more because he "pretends" to start again whereas MA continues with her process.

Concerning task requirement 2, figure 6.2 shows percentages of observed frequencies for the lowest hierarchical level segmentation. The horizontal line establishes

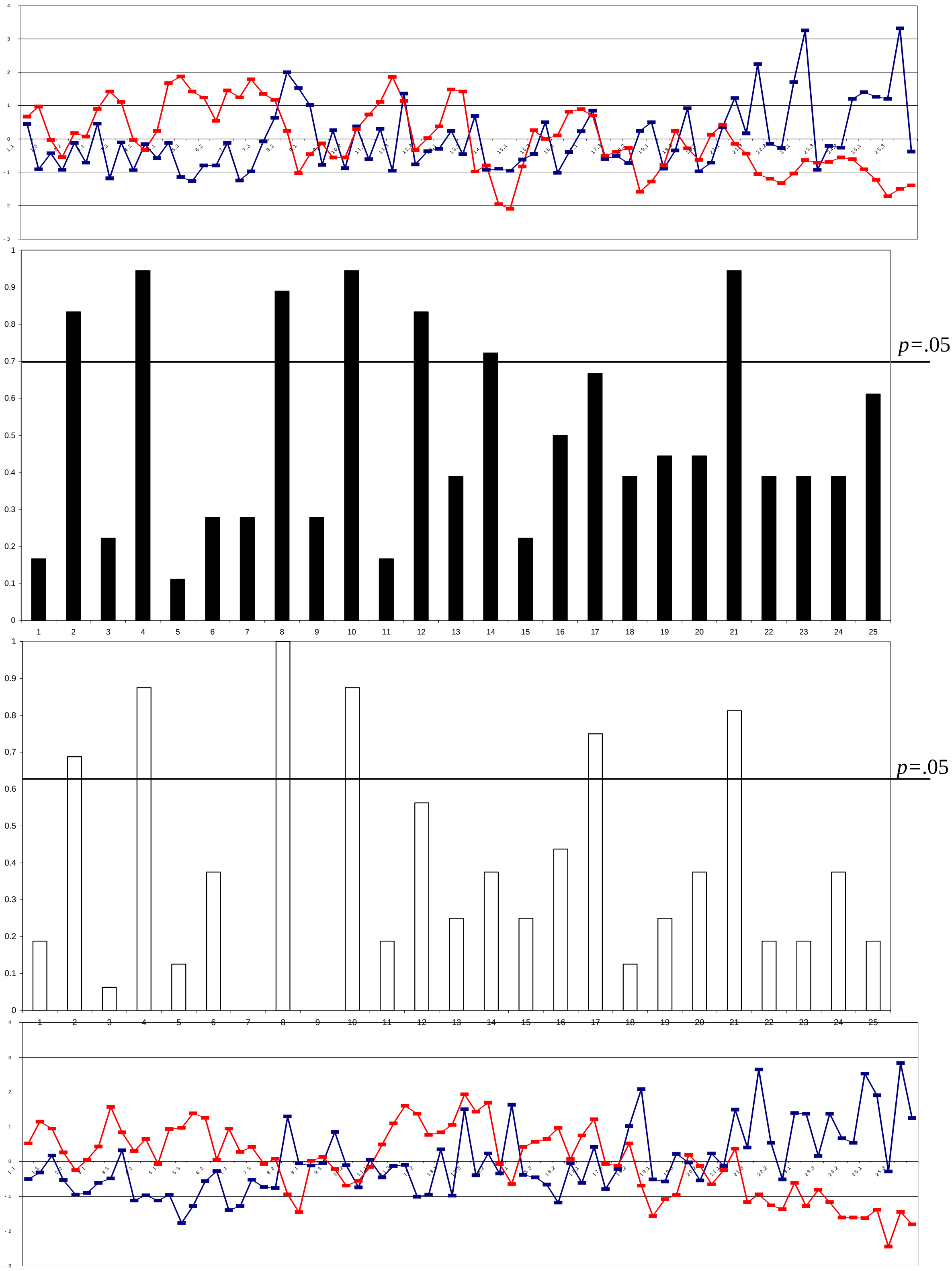


Figure 6.2. *Lowest level Segmentation of A. Cortot´s performance (upper panel) and M. Argerich´s performance (lower panel)*

the significant level at 0.05. First of all a remarkable similarity between segmentations of both performances can be noted. The correlation between the segmentation frequencies of every bar between both performances was r =.880 (*p*<.000). In particular this similarity is observed during the first section (bars 1 to 8). This section is clearly divided into units with four bars each, which are in turn divided again into two lowest level units with two bars each (the latter division is clearer in the first four bar phrase than in the second.) A generative explanation would say that such a clear segmentation in the first part should be associated with a similar pattern of timing and dynamics use. But nevertheless, it does not occur, particularly as regards the AC performance. As it is seen in figure 6.2, the first eight bars do not show a clear pattern of dynamics and tempo gradients at the lowest level. However, comparing this graph with the one in figure 5.18, the segmentation proposed by the listeners narrowly fits the *average performance* ritardandi, which, as it was explained before, is a kind of *virtual performance* that listeners had, in fact, never heard. On the contrary, none of the *real performances* that listeners segmented (AC and MA), present this pattern either in timing or in dynamics. The listeners seem to be "*ignoring*" the performance features in order to fulfil the segmentation task. In that sense, the *average segmentation*, as emerging from the set of listeners as a whole, is similar to the *average performance* elicited by the set of performers: both seem to originate from the characteristics of the musical structure. Thus, the remarkable thing is the listener seems to disregard the expressive information.

Contrarily, in the second branch of the interrupted form, from bars 9 to 22, lowest level hierarchical segmentation seems to be more diffuse and randomly distributed. According to the ritardandi in both versions, Argerich's should be more segmented around bars 12 and 14 (related to the most prominent ritardando at bar 13). Paradoxically, the performance by Cortot is more segmented at this point. Obviously, the ritardando is not functioning as a cue for the segmentation task on the part of the listener of Argerich's performance. In other words, this timing pattern means a different thing for them.

Therefore, these results indicate that timing and dynamics behaviours are not, per se, a sufficient condition to convey the hierarchical grouping structure, as predicted from the generative perspective.

However, these results also reveal some methodological issues that are worth emphasizing. The segmentation experimental paradigm supposes that segmentation at the *lowest level* displays the structural hierarchy and, therefore, it can give some account of the segmentation at the *highest level*. In other words, the second task requirement should be reflected in the first. The results do not strictly suggest this. In the first term in the AC performance, the articulations between groups at lower levels (for example bars 4 and 10) are more marked than some of at higher levels (for example bar 8). At the same time, the segmentation task at the *lowest level* should contain in some way the segmentation at the *highest level*, because the articulation belonging to a high level is also present in the low level, according to the *recursive principle* (Lerdahl and Jackendoff, 1983). Nevertheless, the data observed here diverges from this: in the MA performance, the segmentation at bar 14 it is not manifested with the same effectiveness (observe the *trough* formed around bar 14 in the graph of figure 6.2). Two observations can be made on this matter. The first is that it would seem that the subjects were doing *something else*, that their attention, placed in the lowest level, weakened the preoccupation for articulations of the highest level. The second is that it would seem that new hearings of the piece elicit responses fully configured in another manner. This is clearly seen when examining the marks at bar 21. Notice that at this bar the $\hat{1}$/I was still not reached. For that reason it is possible to say that responses at bar 21 are anticipating bar 22. If figure 6.1 is considered in detail, it is possible to appreciate that in the previous hearing, responses are at bar 22 itself or delayed (bar 23). Nevertheless, after a new hearing, the listener can already anticipate. This anticipation tendency is also observed at bar 8. Compare figures 6.1 and 6.2 at bar 8. The performance of MA, which for the first task requirement had elicited so many responses at bar 9, for the second segmentation has 0 responses at that bar. Evidently, the subjects that in previous hearings had needed more time for segmenting can already anticipate it in later hearings. Certainly, in spite of the familiarization in listening, the successive task requirements modified the listening conditions from one to the other. Although this is reasonable and therefore it is possible to expect this type of difference, the question that emerges is: to what extent is the incidence of expressive factors not different throughout successive hearings of the performance? Would it be possible to think of the structural attributes of the composition as acquiring progressively more weight in the segmentation process at the expense of the incidence that may be proper of the expressive attributes? This point will be discussed further ahead, and chapters 7 to 10 are significantly related to this query.

Nevertheless, examining another important point of the generative hypothesis, the necessity of advancing simultaneously in other directions arises. The generative paradigm supposes that the structured knowledge that the listener has to match the incoming information is isomorphic with some type of theoretical formalism. In our study, for example, the structure of ritardandi of the performance would be isomorphic with the grouping structure of the work. This supposes a sort of mapping between both structures. Nevertheless, we have seen that that mapping is not fulfilled point by point, and that, very frequently, the emerging relationships seem to be more global than specific. In our case in particular, if the patterns of *ritardandi* in the work are not appraised by the listener in terms of grouping boundaries, then in which terms is it appraised? In other words, what alternative meaning (or alternative meanings), can that structure of ritardandi contextually acquire? (see pp. 176 and ff). In order to make progress in that sense the following tasks were developed.

6.2.4 Performance comparison task

The objective of this experiment was not only to compare the performances, but in principle, to investigate what type of representations the expressive attributes might elicit. The idea is that if the subject can compare two performances in terms of a given adjective, then it is possible that their representations of the performance features may be tied to the type of content that such an adjective represents. For example, if the subject is able to compare two performances in terms of the adjective *happy*, this suggests that the performance attributes are being represented in terms of emotions. In the research literature on communicational aspects of musical performance, at least four areas of content exist about what is communicated in performance, and which constitute a sort of *target domain* of the performance's meaning process on the listener's part. The most orthodox proposals agree with the objectivist perspective and speak about meaning in performance in terms of the music's structural attributes (see chapter 4), but there are also some scholars speaking, from different fields, of other musical performance meaning domains related to areas such as emotions (Gabrielsson 2001, Juslin 2005), movement and gesture (Kendall and Carterette 1990, Clarke 2001), and stories (narrative, drama) and characters (agency) (Rothstein 1995, Schmalfeldt 1985). For that reason, it was first investigated if the subjects made use of all the adjectives in the comparison, as a way of looking for possible areas of meaning in performance. A T test for the absolute values of the comparison judgments for each adjective showed that averages of such absolute values (termed here *average use*, because they provide a measurement of the use of such an adjective as a comparison parameter between performances) of all the adjectives was significantly different from 0. Therefore, it is possible to ensure that all the adjectives have been significantly used in the task of comparing performances. Nevertheless, knowing to what extent each adjective was

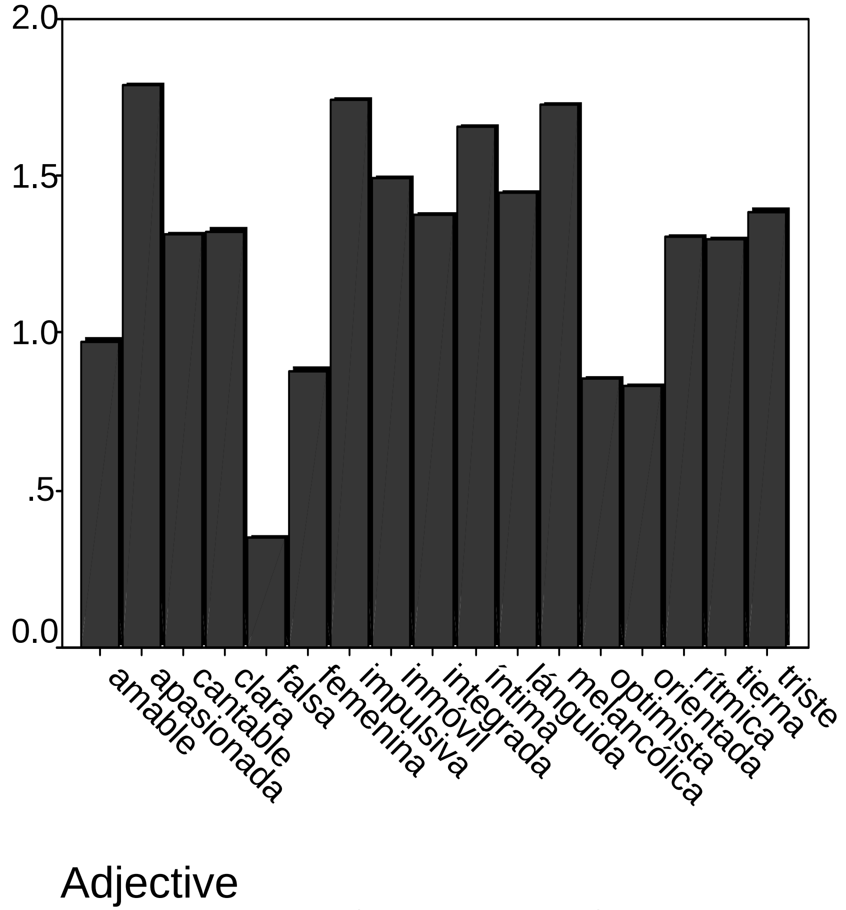


Figure 6.3. *Average use (averages of absolute values of comparison judgments) for the 17 adjectives. (Since English translation of adjectives is problematic, they are in Spanish; see table 6.1 for a rough translation)*

used would allow deeper investigation of the nature of the representations that performances, as the variable of comparison, may elicit in the listener.

A repeated measures ANOVA with the *adjectives* list as within-subject factor and *experimental condition* as between-subject factor showed that the experimental conditions were not significantly different. In other words, subjects who listened to the AC performance first did not make use of the adjectives when comparing performances in a different way from the subjects who listened to the MA performance first. For this reason, the results of both conditions are combined from here onwards. On the other hand, the *adjectives* factor was significant ($F_{[16-512]}=5.149$; $p<.000$). The graph in figure 6.3 exhibits *average use* (average of the absolute values of the comparison judgments) for each adjective. In the graph it is observed that the most used adjective was *passionate,* and the least used was *false.* The use of the adjectives by category for the two dimensions by which the adjectives had been selected was analysed (see Method). Notice that Dimension 1 alluded to areas of the domain of meaning (musical structure, emotions, etc.), whereas Dimension 2 alluded to the use of those terms in Literature (analysis literature, execution literature, etc.). The average use by category is exhibited in figure 6.4. A one factor ANOVA was run for each one of the dimensions. Both of them were significant: $F_{[3-574]}$=8.593; $p<.000$, for Dimension 1, and $F_{[3-574]}$=5.569; $p=.000$ for Dimension 2. A Post Hoc study (Student-Newman-Keuls) for each case was run. For both dimensions two homogenous subgroups were obtained, the first one grouping the 3 first categories and other displaying the fourth category. In this way the categories *Anthropomorphic Attribution* in dimension 1 and *Uncommon* in dimension 2, can be seen to have been significantly less used than the rest of the categories.

It is interesting to notice that, although all the subjects were musicians, the categories most used were *Amateur Analysis,* in Dimension 2, and *Emotion,* in Dimension

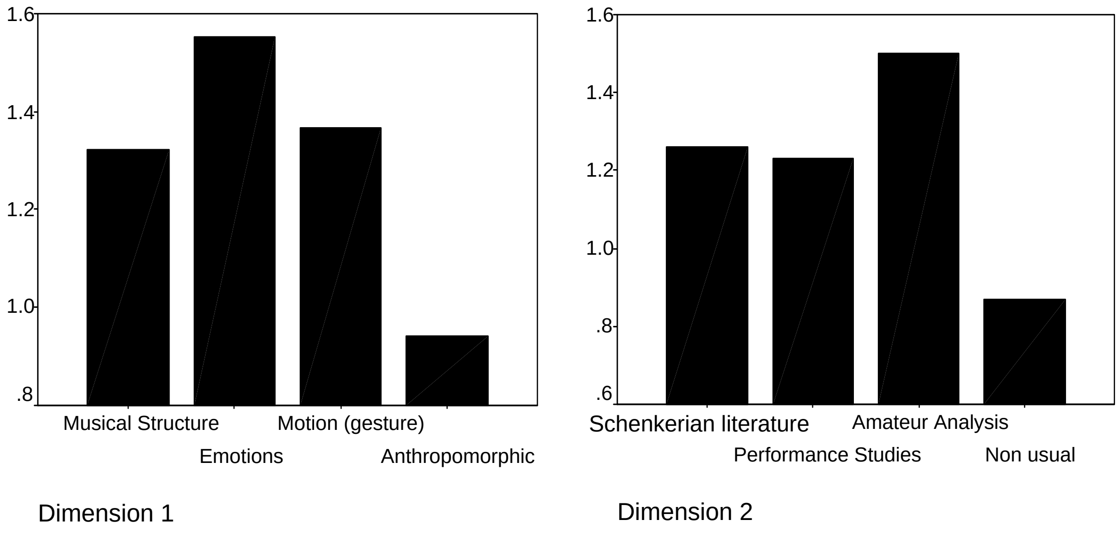


Figure 6.4. *Average Use (averages of the abs. values of the comparison judgments) for adjectives grouped in 4 categories according to 2 different classificatory dimensions*

1. Adjectives referred to *Musical Structure* as well as those employed by *Schenkerian Literature*, were less used.

With the intention of examining fully the comparison between both performances, a T test for each adjective was run. There were significant judgments for only 7 of the 17 adjectives. Curiously, many of the adjectives with high *average uses* (averages of the absolute value of the *comparison judgments*) did not show significant *comparison judgment averages*. Thus, for example the adjective *passionate*, the most used, did not show an average significantly different from 0. In other terms, although the listeners emitted judgments of comparison around the quality of *passionate* for the performance, there was no defined tendency to indicate one of the performances as more *passionate* than the other.

The *comparison judgment* averages for the adjectives that were significant are exhibited in figure 6.5. The bars to the left indicate that the MA performance was considered higher than the AC performance as regards the quality that the adjective describes. On the other hand, the bars towards the right indicate the opposite. Thus, for example, listeners considered the MA performance to be significantly *tenderer* than the AC, and the AC performance more *impulsive* than the MA.

Concerning the quality of the performances as *prolongational* and *non prolongational*, the elicited use of the adjectives and comparisons do not seem to account for it. Expressions frequently used by Schenkerian theoreticians are not reflected in these results. Thus, for example, it would be possible to predict that listeners consider a *prolongational* performance to be more *integrated* than a *non prolongational* one. The results presented here suggest the opposite. This issue not only brings us face to face with the assumptions that the prolongational theory often presents related to performance, but in the particular case of this research it also shows methodological problems. A refinement in the selection of adjectives is necessary in order to improve such methodological issues. For example, the rating for *Schenkerian* adjectives does not show the predictions of theorists about the relation between performance and listeners. This contradiction may be related to a methodological weakness, since these kinds of terms are (at least in the Spanish language) more ambiguous and less used. The fact that the most used adjectives have not presented a differentiated tendency between performances might account for the habitual use of terms referring to music that do not allude to performance problems. On the other hand those words that musicians do use to talk about performance problems are more ambiguous and less used, and so it is therefore much more difficult for the listener to operate with them when comparing. It is necessary to delve deeper into this topic in order to inquire into the more abstract levels of musical thinking.

As we already saw, microstuctural and structural attributes are concurrent. The nature of the listener's experience regarding this concurrency seems to be multimodal. Ratings of use are quantitative indicators of the most active representational modalities on

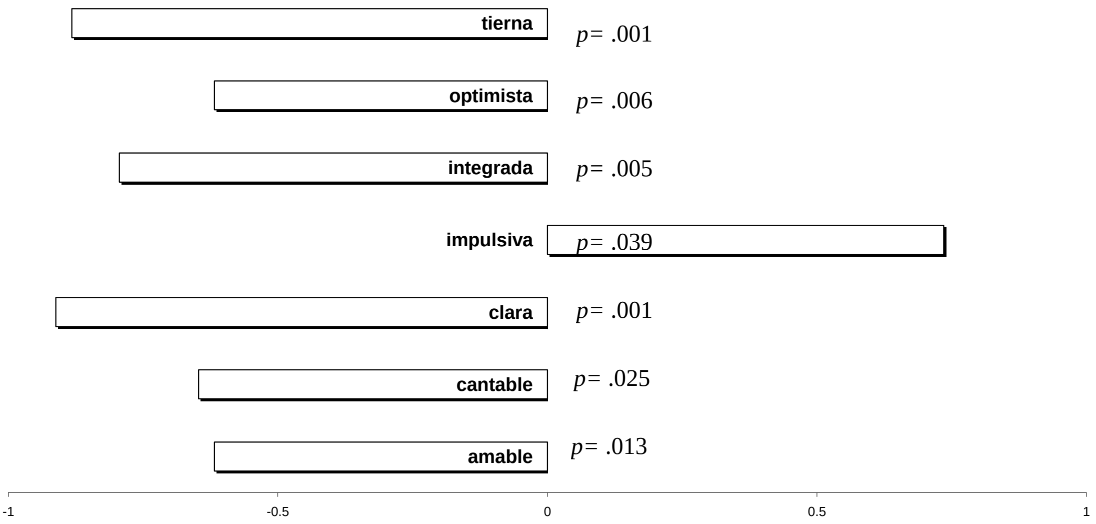


Figure 6.5. *Significant Comparison Judgment Averages. Judgments considering the quality for the MA performance higher are showed towards the left. Judgments considering the quality for the AC performance higher are showed towards the right. (See explanation in the text)*

the part of the listener when comparing versions. The usage of some adjective categories reveals that listeners' experiences of performance timing and dynamics do not always correspond with Music Theoretical terms. On the contrary, they tend to use representations that refer to emotions, motions, etc. To have a declarative access to a given musical attribute does not necessarily condition experiencing it. Moreover, and given that voice-leading seems to imply extremely abstract configurations, it is reasonable to think that the experience of this particular structural attribute might contribute to the listener's experience in other domains (as Schenker suggests)**.**

Undoubtedly, one of such domains is the temporal domain, the area of the configuration of the experience in time. In order to investigate this particular area a second experiment was run. In it, the temporal configuration of the stimuli was manipulated in order to investigate some of the implications that the performance of the prolongational structure might have on the listener's experience of time.

6.3 Listening experiment 2: experimentally manipulated stimuli

6.3.1 Background

The aim of this study is to examine the reception process of the *prolongational* and *non-prolongational performances* of the piece, inquiring into the temporal organization of listeners' perceptions. As seen above (p. 97), the classical cognitive perspective affirms that the performer's actions have an impact on the ways in which listeners perceive certain structural attributes (metre, texture, harmony, etc.). However, we do not know very much about the way in which the details of the performance can influence other kinds of cognitive processes. In particular, if timing is one of the main features that characterise a performance, it is to be expected that it can influence some aspects of the general time configuration in music. As we saw in the previous experiment, the segmentation task shows a particular way to organize time in the listener's musical experience. However, as we can appreciate, both structural and microstructural attributes seem to take part in the segmentation decisions.

According to Epstein (1995) there is a particular way to experience time in music that it could be named *experiential time*. In this way musical events establish themselves in a sequence that – through memories and expectations - can be understood as a whole and be recovered in chronological order. So we have a sequential experience of musical time of episodic nature through which we recognize a *before* and an *after*. For the latter there are two main processes: (1) the retrieval of musical information that has already happened and (2) the retrieval of the information's temporal order. Therefore, it is possible to think that the performance's features influence this *experiential time* configuration in a way not revealed by the segmentation task (which is, as we saw, more influenced by structural than microstructural attributes). This study simply intends to gather some evidence related to this possibility.

In our perception of time the emphasis that certain traits can possess throughout the sequence of events guiding such perception plays an essential role, and the emphasis can be inherent in the structural role which the event plays in the structure. Thus, certain events are *temporally accented*. These are important because they guide attention and perceptual capture (Jones and Boltz 1989, Jones 1992) and they are used for the recall of the temporal sequence (Boltz 1992). The network of such events constitutes an organization of prominences (saliences, accents) inherent to the musical piece. In other words, this group of particularly highlighted events constitutes a kind of setting in which attention and perception are kept and organized. For this reason, this set of prominent events in the piece itself constitutes a *structural attentional scaffolding* (*SAS*).

As the segmentation experiment demonstrated, expressive features may reinforce or contradict the structural information and from that conflict the listener may understand the musical time configuration. Consequently, we can also talk about an *expressive attentional scaffolding* (*EAS*) of the performance itself. To sum up, it is assumed that the listener's attention is captured not only by the characteristics of the piece but also by the expressive information the performance supplies.

In a series of clever and original works, Boltz and her colleagues (Boltz 1992; Brown and Boltz 2002) studied the way which highlighted events, interpolated both in musical sequences and in other types of time constrained sequences (for example filmic sequences) impinge on attending. In them, they showed the effects of extrinsic accentual organization on recalling filmed narrations using short commercials during the observation of television series. Commercials acted as focal points in the temporal sequence, facilitating or impeding the processing of time information according to how they might reinforce or contradict the intrinsic accentual organization. "*By using patterns of temporal accentuation to guide attending, the inherent meaning or gist of the event will be revealed, as well as adjacent and nonadjacent relations within the underlying organizational scheme*" (Boltz 1992; p.91). Subsequently we can talk about *outer attentional scaffolding* (*OAS*), supplied by fortuitous interventions during the listening act.

6.3.2 Aim of the study

The purpose of this study is to examine the possible interrelations between the three kinds of *attentional scaffoldings* (*structural, expressive and outer*), as they can affect the configuration of time in music performance, and therefore, in its reception. The general hypothesis establishes that in conveying the prolongational structure, as the form's generator, a performance will affect the listener's *experiential time*, that is to say the experience of time in terms of *before* and *after*. For this reason the incidence of these *scaffoldings* in memory tasks directly related to the establishment of a particular temporal configuration are examined, particularly (i) time estimation; (ii) retrieving temporal information; and (iii) establishing the chronological order of the recovered temporal information.

6.3.3 Method

6.3.3.1 General issues

This method (Boltz 1992) permits the investigation of how the structure of a given temporal sequence is used to guide its recollection. Its starting point is the assumption that

> *"temporal accents are considered to be psychologically important because they capture attending and direct it toward the corresponding melodic information (...) The basic idea is that the same structural relations used to guide attending and perceptual pickup are used to recapitulate the event's sequence of items. Joint accent structures offer particularly efficient schemes for perceiving and remembering because the overall hierarchical arrangement of nested relations is attentionally outlined."* (p. 91)

This procedure is linked not only to the problem of *unity* (see chapter 3) in performance but also to the topic of music performance viewed as a narrative or dramatic sequence (as a sequence in narrative time).

The experiment's method is based on the fact that it is possible to coincide outer attentional scaffolding (OAS) – a set of marks such as interruptions or cuts in a performance - with structural attentional scaffolding (SAS) – for example cadences at phrase endings – as much as with expressive attentional scaffolding (EAS) – for example, a set of prominent rubato points (places where the relation between acceleration and deceleration is more pronounced). As classical cognitive studies in music performance uphold, frequently SAS coincides with the expressive one. However, as we have seen (see chapter 5, p.175), it is not always like this because rubato (like other expressive components) is often used with different aims rather than simply pointing out the structure. Therefore it is also possible to match an OAS with an EAS, without it coinciding with the structural one (SAS). One can thereby study the interaction between the three aspects of the realization of different tasks that the subjects have to solve after listening to the musical material in question.

Figure 6.6 schematically represents the three attentional scaffoldings of the experiment. The central rectangle represents the composition (*SAS*). In it the interrupted form was illustrated (using the conventional Schenkerian analysis symbols), and some bar numbers were added to locate events more easily. The upper panel represents the AC

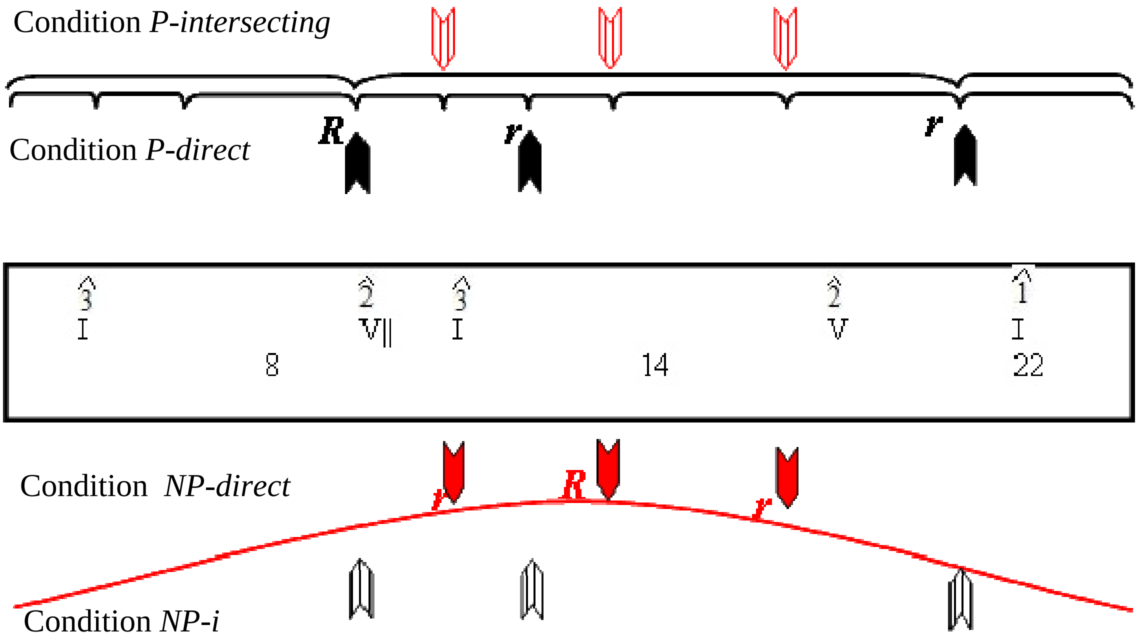


Figure 6.6. *Representation of the experimental conditions. See explanation in the text.*

(Alfred Cortot) *prolongational performance* (in black lines). The R represents the performance's most pronounced *ritardando,* and the r represents notable, though secondary, rubato *peaks* in the performance (see microstructural analysis of timing in, p. 160 and ff). Thus, the black lines and the R-r-r set together represent the P-EAS (*prolongational expressive attentional scaffolding*). On the other hand, the lower panel represents the MA (Martha Argerich) *non prolongational* performance (in red lines). A large arc with its vertex at the position of bars 13-14 was schematically sketched. Thus, the red R-r-r set together represent NP-EAS (*non prolongational EAS*). The arrows represent cuts during the performances. Interpolations were introduced into the stimuli in these cuts. Therefore, each row of arrows represents an OAS (a set of cuts that *disrupts* the continuity of the piece). Notice that the filled (both black and red) arrows agree with the respective performance timing marks (R-r). In this way the black arrows agree with both the ritardando and the rubato peaks of the AC performance. For this reason this OAS was denominated *OAS-A*. In the same way, the red arrows agree with both the ritardando and the rubato peaks of the MA performance, denominated as *OAS-B.*

A general prediction is that if the OAS coincides with the EAS, the tasks related to time processing will be favoured. On the other hand, if the OAS does not coincide with the EAS, these tasks will be inhibited. Briefly, it is hoped that some evidence of the incidence of the performance's expressive features in the listener's time configuration of said performance will be obtained, by analysing time processing tasks with stimuli that either *facilitate* or *make* it *difficult* because of the interpolations.

6.3.3.2 Subjects

118 university students participated in the test. All the subjects had had moderate musical instruction (from 1 to 4 years). They were distributed in 6 groups (N= 25, 17, 17, 15, 26 and 18 respectively) assigned to four experimental conditions (with interpolations, see

Design) and to two control conditions (without interpolations). Only 1 subject recognized the musical piece we used.

6.3.3.3 Stimuli

As in the previous experiment, the selected piece was the Chopin Piano Prelude in B minor op. 28 N°6. The two performances of the Prelude were the same as in the previous experiment (Alfred Cortot 1934 and Martha Argerich 1977)

In each performance three cuts were made –interruptions in performance- according to figure 6.6. The three cuts constitute an *OAS*. Two OAS were arranged, one matching the *P-EAS,* and the other coinciding with the *NP-EAS*. The first one was called OAS-A and the second OAS-B.

A 10 second concert ovation clip (applause) was recorded and used as an interpolation. The interpolation was inserted into each of the indicated cuts. In this way, we obtained 4 (2 *EAS [performances P and NP]* x 2 *OAS [A and B])* versions of the stimuli by manipulating the applause interpolations and inserting them into the cuts (figure 6.6). The versions manipulated in this manner were named *complete stimuli*. Recorded examples 17-20 (in the disc) are *complete stimuli.*

Thus, through the four experimental conditions, the performances appear either with the OAS matching its own EAS (examples 17 and 19), or with the non-matching (*crossed*) OAS regarding its own EAS (examples 18 and 20). In the first case, EAS and OAS are combined in a *direct* manner. In the second case, EAS and OAS are combined in an *intersecting* fashion. Therefore, the complete stimulus *P-direct* corresponds to the *prolongational* performance marked (interpolated) in the OAS-A positions (grey arrows in figure 6.7; example 19). The complete stimulus *P-intersecting* corresponds to the *prolongational* performance with marks in the OAS-B positions (white arrows in figure

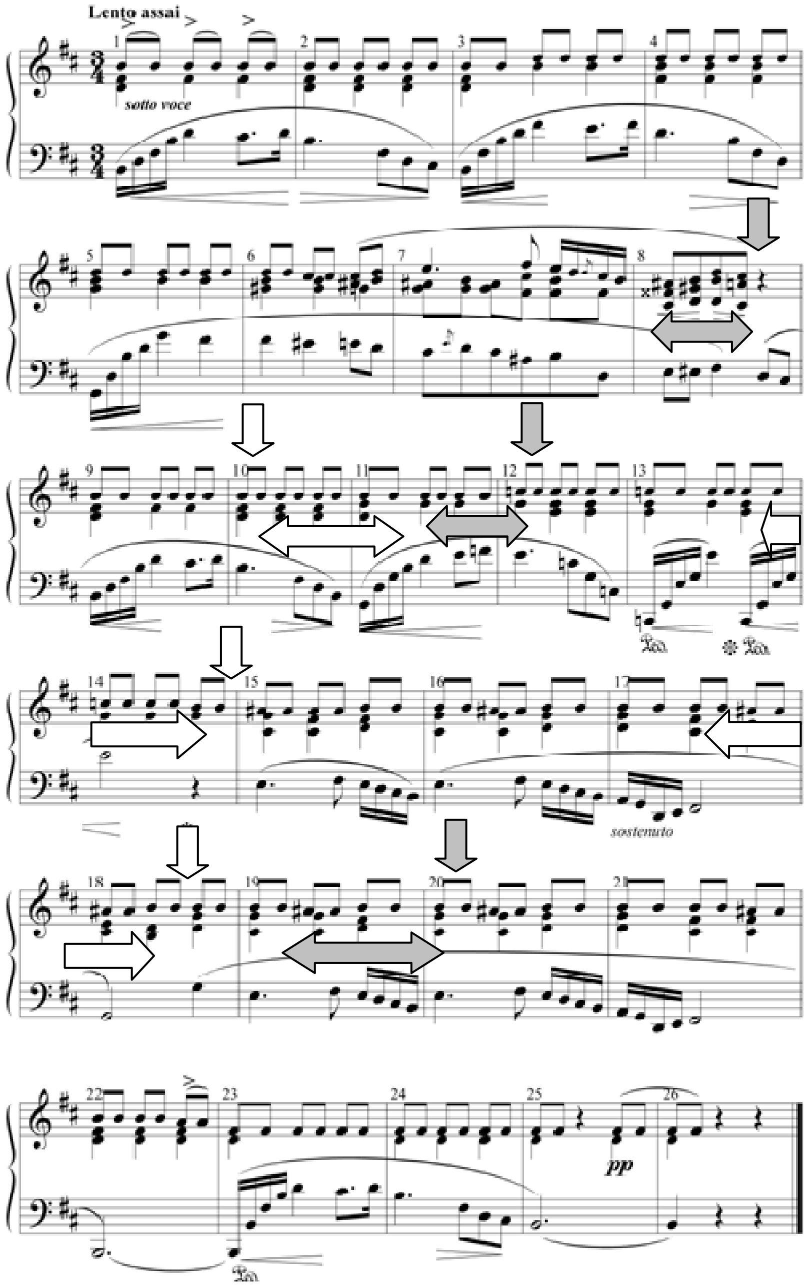


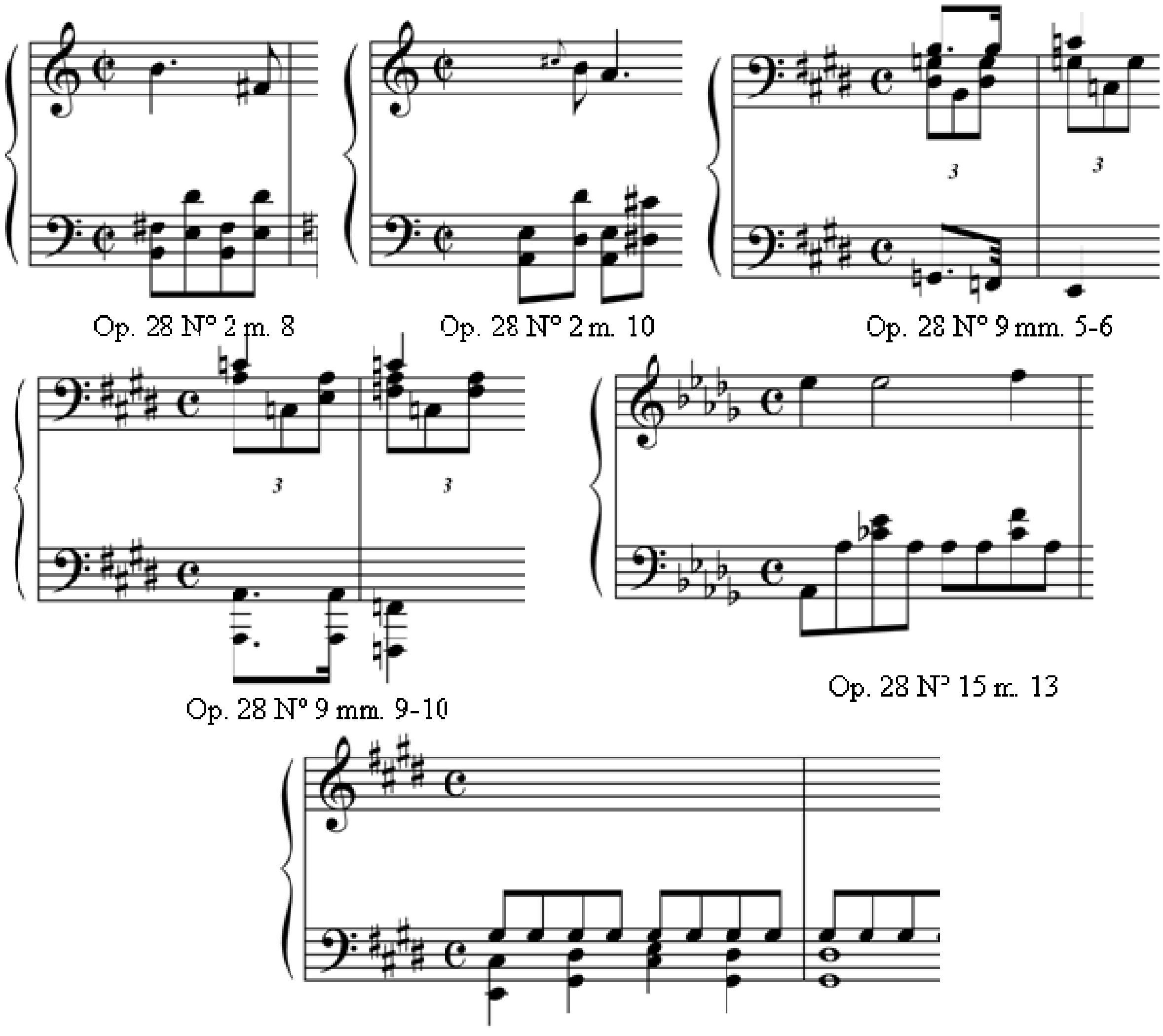
Figure 6.7. *Score of the Chopin Piano Prelude in B minor op. 28 N°6. The simple descending arrows indicate the places where the marks (cuts in performance) that constitute the outer attentional scaffoldings were inserted. The grey arrows point out the marks that compose the OAS-A that coincide with the expressive attentional scaffolding (points of maximum rubato) of the* prolongational *performance. The white arrows indicate the interpolations that constitute the OAS-B, that coincide with the NP-EAS* (*of the* non prolongational *performance*)*. The double horizontal arrows specify the sequences taken for the different tasks. The grey arrows indicate the sequences related to the EAS-A (type A sequences), and the white ones are related to the EAS-B (type B sequences).*

6.7; example 20). The complete stimulus *NP-direct* corresponds to the non prolongational performance with cuts in the OAS-A positions (example 17) and the complete stimulus

NP-intersecting corresponds to the non prolongational performance with cuts according to OAS-B (example 18). These four complete stimuli represented the four experimental OAS conditions. In addition, 2 control conditions were arranged *without* the OAS. This simply means prolongational performance (control prolongational - *CP* condition) and non prolongational performance (control non prolongational - *CNP* condition) respectively. Therefore this experiment involved 6 different conditions.

Additionally, 6 three-second sequences were taken from the material adjacent to the cut (before or after each cut) and used in the *retrieval task* as *heard* sequences (see Figure 6.7). Three of them were selected from the adjacencies of the cut points corresponding to OAS-A. They were called *Type A heard sequences* (grey in figure 6.7; example 21 in disc). The other three were obtained from the material adjacent to the cuts corresponding to OAS-B (white in figure 6.7). Therefore they were named *Type B heard sequences* (example 22). Similarly, six other sequences of equal characteristics belonging to different pieces were taken and considered as *unheard sequences* in the same task. When selecting the musical pieces to extract the mentioned sequences, similarities in texture, tonality, time and character were observed. The preludes from the same Chopin series (Op. 28), N^0 2 (bars 8.3 to 8.4 and 10.2 to 10.3), N^0 9 (bars 5.4 to 6.1 and 9.4 to 10.2), and N^0 15 (13.1 to 13.4 and 30.1 to 31.1 ½) were used and recorded by the same artists in the same recording sessions (Figure 6.8; Example 23). Between the sequences of the series a 7-second silence was interpolated.

Finally 12, three-second sequences from adjacencies of each cut (in a similar way to the previous but now both previous to and after the cut) were taken. The 6 sequences corresponding to OAS-A were named *Type A sequences*, and the 6 that corresponded to OAS-B were called *Type B sequences*. Different pairs were set up using those sequences.


Op. 28 Nº 2 m. 8

Op. 28 Nº 2 m. 10

Op. 28 Nº 9 mm. 5-6

Op. 28 Nº 9 mm. 9-10

Op. 28 Nº 15 m. 13

Op. 28 Nº 13 mm. 30-31

Figure 6.8. *Unheard clips – Retrieval task*

Three of these pairs had *Type A sequences* and were named *Type A pairs* (Example 24). Another three, *Type B pairs*, were formed by *Type B sequences* (Example 25). Finally, four pairs were *Mixes*, including one *Type A sequence* and one *Type B sequence* (Example 26). The pairs fulfilled the following criteria: (i) no pair could be formed by two adjacent sequences of a same cut, this means the pair could not take the previous or following sequence of a determined cut; (ii) all the pairs had to be formed by sequences of contiguous cuts (for instance a sequence adjacent to cut 1 and another sequence adjacent to cut 2); (iii) none of the pairs could be formed by non contiguous sequences (this means that for example there could not be a pair integrated by a cut 1 sequence adjacent to cut 3); (iv) type A and B pairs had to have sequences with the same position with respect to the cut (for example, a sequence *prior* to cut 1 and a sequence *prior* to cut 2); (v) on the contrary, mixed pairs had to have two sequences corresponding to opposite locations with respect to the cut (for example a sequence *prior* to cut 1 and a sequence *posterior* to cut 2), this last requirement sought for both sequences in the pair not to be too close in the original (in the *complete stimulus*); (vi) the pairs had to avoid thematic parallelisms (both sequences of the pair representing the same thematic motif); (vii) the pairs had to avoid ambiguous situations given by repetition of the material. The two sequences of the pair were separated by a two-second silence and between pairs a seven-second silence to carry out the task.

6.3.3.4 Apparatus

The stimuli were processed with a computer using a standard sound editor and were recorded on CDs following the test order for each experimental condition. Stimuli were reproduced using a standard JVC RC-QN1 WT CD player for all test sessions.

6.3.3.5 Procedure

Originally, the test had 4 tasks ordered according to the cognitive demands represented by each. For each task there was a similar procedure, subjects would first listen to the Complete Stimulus and then receive the instruction for the task. The subjects were previously given general instructions to listen to a musical composition with the purpose of doing tasks related to memorizing a heard musical piece, but, as was said, the nature of the task was revealed just after the listening practice.

As Task 2 was similar to task 2 in the previous experiment (Register of impressions), the results are not reported here (for the same reasons). Therefore, results presented here correspond to tasks 1 (*overall time estimation*), 3 (*retrieval*) and 4 (*temporal order recognition*).

***Overall time estimation task**:* subjects were asked to estimate how much time seemed to have passed between the performance's beginning and end. "Radically different impressions of duration can result from different degrees to which attention is directed toward temporal events." (Brown and Boltz 2002). It is assumed that if attention is further disrupted – as in a non-articulation point condition – duration will be overestimated. Since it is possible to think that a prolongational performance will demand more diverted attention (due to the rivalry between surface and deep levels) predictions about the overestimation of the overall time of prolongational performances may be formulated.

***Retrieval task*.** Subjects listened to the Complete Stimulus for the third time (remember that they had already heard it for each of the previous tasks) and then a series of 12 sequences was presented (6 unheard and 6 known, three type A and three type B). They were asked to decide whether each one of them was known (heard, belonging to a previously listened piece) or unheard (new). Besides making a heard-unheard judgment for each item, they were asked to indicate their certainty on a 7-point scale ranging from very uncertain (1) to very certain (7). This task took approximately 5 minutes.

***Temporal order recognition task*.** For the fourth time subjects listened to the Complete Stimulus and then a series of 10 pairs (three Type A, three Type B and four Mixed) was presented. They were asked to say which member of the pair (the first or second sequence) had appeared in the complete stimulus first. Furthermore, they were asked to indicate their answering certainty on a 7-point scale ranging from very uncertain (1) to very certain (7). This task took approximately 5 minutes.

The test was carried out in grouped sessions. Acoustic sound reproduction conditions were similar for all sessions.

6.3.3.6 Design

This experiment had 3 x 2 experimental conditions. The first factor represents relations between expressive and outer scaffolding: (i) without outer (*control*); (ii) coinciding outer and expressive (*direct*); and (iii) crossing outer and expressive (*intersecting*). The second factor represents the two types of performances: (i) *prolongational* and (ii) *non prolongational*. In this way the six conditions were: P-c (control prolongational), NP-c (control non prolongational), P-d, P-i, NP-d and NP-i (see figure 6.6). Consequently, one can observe (i) the incidence of the *expressive attentional scaffolding* compared with control conditions between them; (ii) the joint incidence of structural and expressive features comparing all conditions *d* and *i* amongst them since, for example, condition *P-d* has interpolations in the same place as condition *NP-i*. In that way those interpolations mark the same structural points but different *expressive* features.

Both series of sequences in the *retrieval task* and pairs of the *temporal order recognition task* were recorded in random order.

6.3.4 Results

All the results obtained in the three tasks are presented. Several of them, as can be observed, do not achieve statistical significance. Nevertheless, due to the reduced number of subjects of some groups we estimate they can be understood as trends of interest for further studies.

6.3.4.1 Overall time-estimation task

Concerning this task some predictions were formulated: (i) expressive differences will elicit different time estimation accuracy; (ii) Time of interrupted performances will be judged less correctly; (iii) Inaccuracy will be higher for the intersecting condition. Differences between each subject's overall time estimation and the actual stimuli duration were calculated. This value was termed the *estimation error*. (Because the stimuli in the different conditions presented different global durations, this estimation error was standardized as a proportion of the stimuli duration). In this way the mean of the overall time estimation error in the *P-c* condition was 63.94% of the actual duration of the stimulus. In the *NP-c* condition it was 43.16%. For the experimental conditions, the respective means were: *P-d* 112.71%; *NP-d*, 65.56%; *P-i*, 154.77%; and *NP-i*, 148.64%. These values are represented in the graph of figure 6.9. A univariate ANOVA with factors *Condition (c, d, i)* and *Performance (p, np)* as factors between subjects were significant for both (Condition: $F_{[2-130]}$=34.022; *p*<.000; Performance: $F_{[1-131]}$ = 6.635; *p* = .011). On the other hand, the interaction between both factors was not significant.

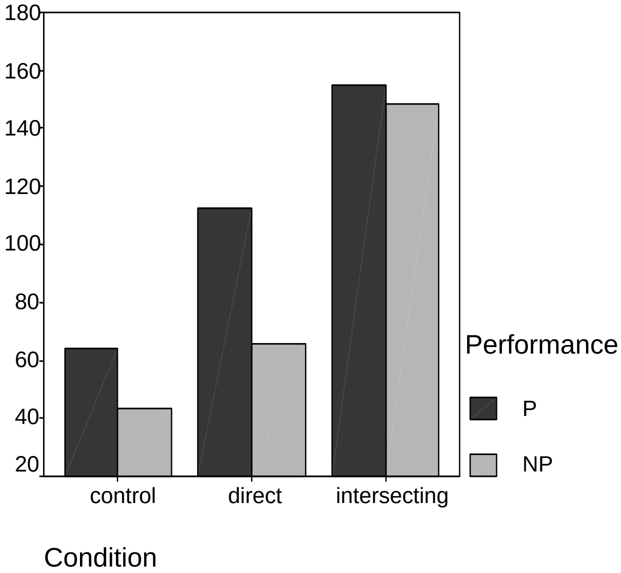


Figure 6.9. Estimation error *(proportional) Averages of the overall time estimation for prolongational and non prolongational performances in the three conditions*

These results show that performance traits affect the global appreciation of the length (time) of the performance. The greater estimation errors in the conditions with interpolations account for the interruption, when breaking the continuity of the work as a whole, distorting the estimation of the overall time even more. In other words, the disruption of the temporal continuity affects the time estimation task. Nevertheless, the differences between the *direct* and *intersecting* conditions are evidence of that distortion being greater when the disruption of temporal continuity does not adjust to the temporal organization proposed by the set of the performance’s most salient timing characteristics. That is to say, when external contingencies break the time configuration proposed by the performance’s timing, the overall time estimation is more inaccurate. This clearly accounts for the importance of the timing features taken as a whole in the listener’s temporal experience of the performance.

6.3.4.2 Retrieval task

Concerning this task some predictions were formulated: (i) expressive differences will elicit different retrieval levels; (ii) retrieval of short excepts will be higher for direct condition than for control condition; (iii) retrieval of short excerpts will be lower for the intersecting condition than for control condition; (iv) retrieval of short excerpts non adjacent to expressive scaffolding will be lower than retrieval of excerpts adjacent to expressive scaffolding

Each of the answers and certainty judgments given by the subjects was gathered in a single response on a 14-point scale ranging from 1 (incorrect answer, *very certain*), to 14(correct answer, *very certain)*. The averages for the six groups can be seen in the graphs in figure 6.10.

An ANOVA Repeated Measures was run with the *Sequence* factor (*unheard, heard A, heard B*) as the within-subject factor, and *Condition* (*control, direct, intersecting*) and *Performance* (*prolongational, non prolongational*) as the between-subject factors. The factor *Sequence* was significant ($F_{[2-130]}=61.583$; $p<.000$). A *post hoc* contrast determined that the difference between the averages for *unheard sequences* and *heard a sequences* was significant ($F_{[1-131]}=102.198$; $p<.000$), and the difference between *heard a* and *heard b sequences* was marginally significant ($F_{[2-130]}=4.088$; $p=.045$). It may therefore be appreciated that subjects could better recognize sequences already listened to than those belonging to other compositions. In the same way, sequences from the adjacencies of the rubato peak positions of the prolongational performance were better recognised, that is, sequences associated with important points of the musical structure viewed from the voice leading perspective.

In contrast, the *Performance* factor was not significant. Thus, it is possible to

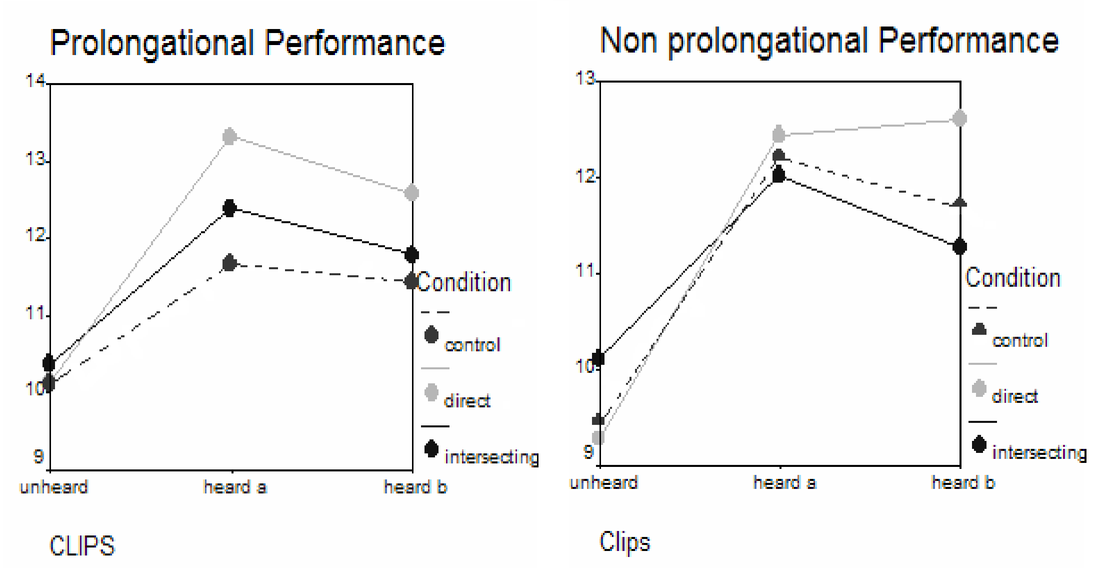


Figure 6.10. *Retrieval task. Left panel: Prolongational performance. Right Panel: non prolongational performance.*

speculate that the recognition task is similar when listening to any one of the two performances (without differences between the prolongational and the non prolongational ones).

The *Condition* factor showed itself to be marginally significant ($F_{[2\text{-}130]}=2.611$; $p=.077$). Although this evidence is very weak, it is worth analysing in terms of trends. This result suggests that listeners tend to recognize better sequences coming from the interruption points. It arises as evidence that the disruption of the temporal continuity alters the retrieval task. In other words, there is a slight tendency towards the attention to certain expressive characteristics facilitating recall of the musical sequence, or making it more difficult. That is to say that, although the evidence is weak, it is possible that according to how the performer manipulates the expressive features, certain sequences can be retrieved by the listener (with the subsequent configuration of the whole in the listener's representation).

6.3.4.3 Temporal order recognition task

Concerning this task some predictions were formulated: (i) expressive differences will elicit different temporal order recognition levels; (ii) temporal order recognition of short excepts will be higher for direct condition than for control condition; (iii) temporal order recognition of short excerpts will be lower for the intersecting condition than for control condition; (iv) temporal order recognition of short excerpts non adjacent to expressive scaffolding will be lower than temporal order recognition of excerpts adjacent to expressive scaffolding

For the analysis of the temporal order recognition task the procedure was similar to calculating a repeated measures ANOVA. The *Pairs* factor *(type A, type B, mixture)* was the within-subjects factor, and *Condition* (*control, direct, intersecting*) and *Performance* (*prolongational, non prolongational*) were the between-subjects factors. The *Pairs* factor was significant ($F_{[2-130]}$=12.701; *p*<.000). The graphs in figure 6.11 show that the type b pairs were the best ordered for both performances, while predictions estimated that type a pairs will be better ordered in prolongational performance. Neither the *Condition* factor nor the *Performance* factor were significant. Nevertheless, the *Condition*Performance* interaction appeared as marginally significant ($F_{[2-130]}$=3.199; *p*=.044). It is possible to appreciate in the graphs of figure 6.11 that the control condition reaches the highest scores for one performance and the lowest scores for the other. The difference between both control conditions appeared as marginally significant ($F_{[1-41]}$=4.106; *p*=.049). Thus, it can be appreciated that when listening to performances without interpolations, subjects manage to perform better on the temporal order recognition task for the AC performance than for the MA performance. This shows the way in which the expressive characteristics affect the task of establishing a temporal order between pairs of events.

It is quite possible that the task was too difficult, implying an excessively high cognitive demand for the subjects. Notice that the averages are around values 7 and 8, and

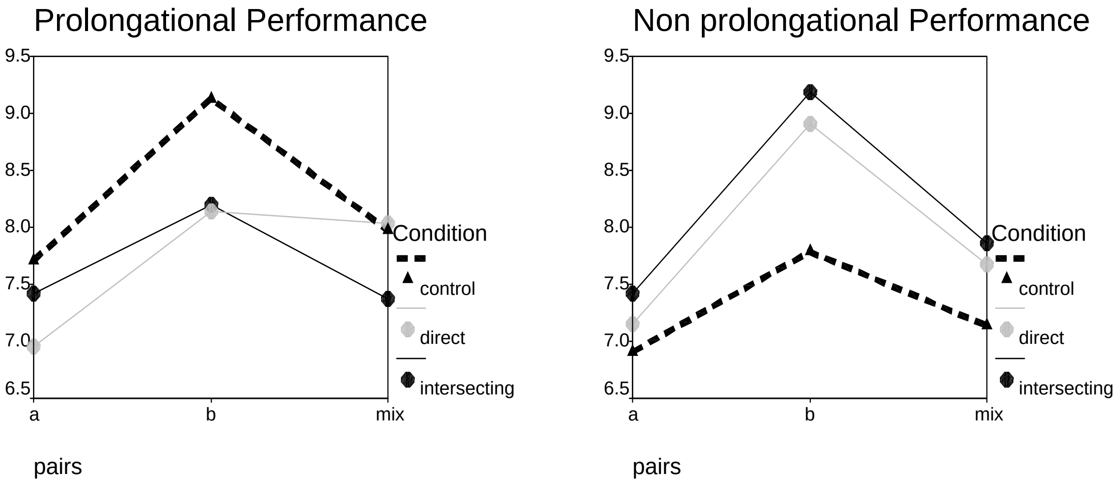


Figure 6.11. *Temporal order task. Left panel: prolongational performance. Right panel: non prolongational performance.*

that relatively low standard deviations appear (between 2.06 and 2.28). This reveals that subjects were in general very uncertain in their answers. In spite of this, the data demonstrate that such a crucial task for the time configuration of the performance in *on line* listening, as is establishing the *before-after* relationships between isolated components, is influenced by the expressive characteristics of the performance. Remarkably, when introducing outer attentional scaffolding, the incidence of the performance itself seems to diminish (see the similarity of results for the *direct* and *intersecting* conditions for both performances). It would seem that what is externally attached orients the establishment of the *before-after* relationships better than the performance's particularities. This point will be crucial in the analysis of the experiments of the third part, which will discuss how crossmodal information can give rise to similar performance time configurations.

6.3.5 Discussion

This experiment investigated the structural and expressive interaction attributes in the listener's performance time configuration. The musical stimuli were manipulated by generating cuts throughout their continuity. In some cases those cuts agreed with the position of the most salient timing expressive attributes, whereas in others they did not coincide. In short, the rationale of the experiment was based on considering that if such timing attributes contribute to a particular performance time configuration on the part of the listener, then the cuts coinciding with them would facilitate tasks related to the construction of such a configuration. On the contrary, cuts that do not coincide with the most salient timing attributes should disturb the accomplishment of tasks related to the time configuration. The tasks were ordered according to increasing cognitive demand, to the extent that they demanded greater memory and attention resources.

The primary aim for including this kind of experiment in a research undertaking concerning the role of prolongation in performance communication is linked to the findings of the previous experiment in which listeners were asked to segment the course of the performance. In that experiment, in spite of certain smaller differences in the ways of segmenting the two remarkably different performances as regards their use of timing and dynamic resources, the listeners tended to segment both performances in the same way. This led to the speculation that such segmentation could clearly be understood as an imposition of the composition itself (the *intentio operis*). From this, generative speculations about the communication of structural attributes from the handling of expressive attributes on the part of the performer were seriously questioned. The design of the present experiment aimed to investigate possible interrelations between *intentio operis* (imposed by the composition) and *intentio interpretis* (imposed by the performance), through accentuating both *intentios* using outer accentuations (cuts and interpolations).

The existence of these two *intentios*, revealed to the listener through different sets of features that function as *scaffoldings* to the attentional devices, shows an ontology of the musical piece that goes beyond what is possibly recoverable through the musical text written in the score.

The findings indicate that some temporal activities are influenced by these *intentios.* Remarkably, the three tasks here are important for experiencing musical time as narrative (Epstein 1995). The obtained data also showed tendencies towards an interaction between the effects of the different *scaffoldings.* The results of this experiment show that the relations between structural, expressive and external marks are decisive for memory tasks.

These considerations allow us to estimate that the influence of the particularities of performance in listening tasks goes beyond the issue of problems of *salience of the component* and *perceptibility*. In contrast, we can observe that performance influences the way that the listener can recreate the temporal facet of the discourse, crucial for talking about a musical narrative (Imberty 1997a, Shifres 2004). The following chapters will go deeper into this issue.

6.4 General discussion

As we have seen in Chapter 3, the prolongational structure of music is an extremely intricate construct, whose systematic study becomes particularly difficult because of, firstly, a vague enunciation of its status, and secondly, methodological and epistemological problems arising as a result of such a lack of definition.

This first study consists of an epistemological exercise in which we try out available paradigms and methods with the aim of finding an adequate frame for developing the study.

We can see that most of the studies on performance have been firmly supported by the *generative paradigm.* Findings offered here seem only partially to support the generative hypothesis, since some of them are difficult to understand in terms of rule systems, grammars or other classical devices. We have seen that there is a very important interpretative task on the part both of performers and listeners mainly based on: (i) examining available information in the light of the context in which this information is presented, and (ii) a clear intervention of their own intention in the interpretative process.

Because cognitive psychology, naturally preoccupied in finding general laws shared by subjects when thinking, acting, feeling, learning, remembering, etc., has focused on the search of commonalities in musical experience, it has had strong ties with the objectivist approach to music performance (see chapter 2). The results of these experiments allow the consideration of important aspects of the prolongational structure of tonal music related to such common behaviours on the part both of the performer and the listener. In that way there are considerable elements for continuing the search for stronger commonalities. However, if this study continued following this path, some improvements of the present experiments would be necessary. Firstly, the *intentio lectoris* should be explicit by using a different experimental paradigm. That paradigm should be based on stimuli specially performed for the experimental treatment, in which performers be asked to play a piece with the intention of communicate the previously elucidated prolongational structure. This aspect is related to the classical communicational approach, by which communication is defined *from* a given communicative intention (although, as we shall see in the next chapters, some alternative communicational perspective may do without this intention attribution). Secondly, the exploratory listening studies presented here appeared as unsatisfactory in order to contribute with strong evidence about the way in which composition’s prolongational structure and performance come together in the communicational process. Understanding prolongation as percept would entail the use of alternative experimental paradigms, but, at the same time, it would confine the study to very short musical excerpts and surface prolongational issues. That is the case of some previous research that used the experimental paradigm of “matching” with a performed reduction (Serafine *et al* 1989, Shifres y Martínez 2000), and other paradigms (see Martínez 2006).

Nevertheless, many interesting questions related to the individual both in performance and in the reception experience, which, as we will see in the next chapter, are crucial in the current music performance scene, seem to go beyond that perspective. Other alternative view of the role of the prolongational structure in music performance communication will be proposed in the following chapters. However, before abandoning this perspective, the results of the experiments will be discussed, in this section, in the light of the most classical approaches in performance studies.

6.4.1 The personal performer

As we will see in the next chapter, *individuality* is currently one of the most appreciated features of a performance. All performers intend to be *personal*, intend to give a *personal interpretation*. A priori, it seems difficult and even contradictory to study this individuality from the perspective of a grammar. However, we have seen that certain clearly idiosyncratic components – related to a particular artist, a given epoch, a performative tradition, etc. – may be explained in systematic terms, tying the way the performer functions to the nature of the task, and the musical structure involved in such a task. Nevertheless, in other cases it seems difficult to draw up a mapping of a particular music performance from the description of each characteristic of the musical structure. On the contrary, the way in which the musical structure seems to support the characteristics of the performance would require a particular interpretation in each case.

On this matter, it is interesting to consider the differences found in the analysis of a performance's structurally clear and ambiguous zones. From these differences it is assumed that the performance's originality is more crucial when the structure seems more ambiguous. In many cases, then, the possibility of confining the performance actions to rule systems or grammars seems to be related to the structural simplicity on which such actions are operating. In other words, when the structure appears in a more or less *standardized* way, that structure's *standard* behaviour seems to correspond with 'standard' performance behaviour on the part of the performer. Such standardization is manifested, for example, in the *average performance*. This virtual performance presents many behaviours that can be enunciated as rules (see chapter 5, pp. 167 and ff). Nevertheless, it seems that the most interesting and attractive aspects of the performance are lost in such manifestations.

In addition, we have also seen that the relationship between the structural particularities and their treatment in performance is tied to the influence of the performance's temporal context. We had therefore indicated that the performance involves multiple tensions between *intentio operis, intentio auctoris, intentio interpretis, intentio èpoche* (see p. 173), etc. These tensions conform to a framework that makes of each performative context (and as we will also see, of each reception context) a particular situation. If the *generative* perspective anticipates the rules of production of a textual object (in this case the production of a performance) "analysable independently of the effects that (such a production) causes" (Eco 1990), enunciating a performance grammar on this intersection of *intentios* may be inadequate. According to Eric Clarke (1989a) one of the problems with the generative paradigm is the rigid distinction between syntax and semantics. This distinction "*requires that every aspect of musical structure be accounted for entirely in terms of a logic of structural relations*" (p.19). Nevertheless, at least in the western academic tradition, "*each piece can make use of a substantial number of principles that are specific not only to that work, and which are consequently inexplicable (or at best explicable only at a very general level) in terms of a broad and general structural theory*" (p.19). The composition and its performance are, in the context of western contemporary musical production, original by definition. They emerge from that aesthetic interest.

At the same time, the set of performance actions (each of them extremely simple), does not always seem to constitute a complex organization, of a hierarchic type, to which it is possible to attribute the originality of the performance (Clarke 1998).

Due to all of this, from our point of view, an *interpretative* perspective, involving the conjunction of the different *intentios* according to the production context constraints, seems more reasonable. From this perspective, the concept of *interpretative criterion* replaces the *grammar*. In this framework the Interpretative Criterion is the collection of expressive actions (in terms of expressive parameter deviations) exerted by the performer that responds to: (i) the structural attributes of the piece; (ii) the performer's stylistic knowledge; (iii) the performer's intention, (iv) the performance style of the epoch, etc. In this way an interpretative criterion is unique for each performance. The interpretative criterion is more exposed when the performer has a good opportunity to put in action his or her *individuality*. In this case, the organization of the musical structure is altered by the performer's intention and the epochal performance style. Thus, with the concept of the *interpretative criterion,* certain evidence that supports the generative hypothesis could also be explained, with the advantage of including the idiosyncratic component in such an account. It could be used, for example, to explain the stability of expressive attributes across successive performances. From the generative perspective, this is evidence of the performer's actions being governed by rules directly linked to attributes of the musical structure (Palmer 1997). Nevertheless, we have seen in the analysis of Alfred Cortot's performances, recorded throughout 20 years, that the stability of certain characteristics seems to be an attribute of their individuality rather than the result of forces inherent to the composition's structure. On the other hand some aspects of this individuality have been consciously specified by the artist himself. Talking about the performance of the Prelude in B minor, Alfred Cortot said:

> *"Here, the rubato consists of giving the essential melodic notes, those that are more painful, their total expressive value. It is in the first line where this masterpiece becomes more stirring, by the quality of the dream that then*

> *bathes the melody, by its unmaterialization. The theme of this prelude requires a slight impulse in its ascending part, and abandonment in its descending part"* (1934, p.36-37)

Influenced by semiotics (and signs theory) and hermeneutics, the interpretative perspective is anchored to the semantics more than to the syntax of musical production. According to this, the *interpretative* perspective maintains that the crux of understanding happens when the relevant knowledge is placed in a hierarchy. Unlike the generative perspective's proposal (see chapter 4), from the interpretative point of view the more integrated, processed information is not lodged in the mind in abstract structures onto which the incoming information is mapped. The greater integration of the information is achieved through heuristics in which the input is integrated into structures that emerge from the relations constructed with data provided by the context. By all means, these heuristics imply the use of previous knowledge, but the information does not integrate a previous organization, a prefabricated structure, but rather the current context. However, up to now, the way in which the incoming information is considered and processed in the current context, as well as the criteria by which a certain type of information can be relevant, have not been explored enough in the field of musical communication.

In spite of all this, it is possible to think, following Jackendoff (1987), that the originality of an individual expert performance may no longer be explained as a deviation with respect to a norm (which allows understanding a certain *natural, human and expressive* base of a given performance), but rather as a deviation from an expressive, culturally accepted structure. Certainly, this expressive, culturally validated structure may also be understood as a norm but a higher level norm. In other words, knowing the expressive structure that *generatively* ties a given structural component to a type of conspicuously associated action makes the processing of *original* components of an expert performance possible: it represents a kind of generative base for further interpretative processing. Thus, the generative and interpretative approaches are not in opposition but complement each other. For example, different hypotheses exist about the origin of certain expressive timing deviations within the scope of generative studies. Thus, a perceptual hypothesis (Drake 1993) seemed to be opposed to a cultural one (Repp 1998a). Despite them seeming absolutely contrary, it is possible to think that both hypotheses account for the phenomenon of rubato at different levels, one tied to psychophysical aspects (a sort of phonological level) and another related to culturally validated expressive aspects (a syntactic level: Pennel and Drake 1998). In the same way, it is possible to think of an interpretative approach as more tied to a semantic level of musical communication, involving the analysis of the musical structure relative to more sophisticated theoretical constructs, such as the prolongational structure.

Some of these aspects will be treated over the remaining chapters of this thesis, in which a perspective of musical communication situated in its context will be further investigated. As part of this investigation, the role of performance in the *completion* of the musical work will be explored. The generative paradigm places the performer in the middle of the communication between composer and listener. As a medium the performer must *project* the structure revealed by its systematic analysis. This projection in terms of structure-performance mapping constitutes the point of confluence between the musicological perspective of the objectivist performance and the generative paradigm’s psychological approach. Nevertheless, the results presented here speak in favour of a conceived, produced and socially accepted performance even though such a basic principle does not conquer all the aspects of the performance itself. Musical communication does not seem to happen entirely through a channel scaffolded by rule systems. In that sense "*(u)nderstanding and trying to explain musical structure is not the same kind of activity as understanding and communicating music. There is a genuine overlap between these poles of activity, but it cannot be a complete overlap*" (Dunsby 1989; p. 7). Therefore, there have been other ways of understanding performance that without excluding the musical structure allow extending the horizon of communication in musical performance.

We hope to have demonstrated that an alternative interpretation of performance actions to the generative explanation is necessary. The alternative explanation would have to account for the performer's contribution, but it would also have to account for the means at his or her disposal for constructing his or her performance as a solution to the aforementioned tensions.

6.4.2 The cooperative listener

In the same way that the performer put the features of his or her performance in context according to the composition's structural traits, it is possible to find, in the listeners' responses to the performances, a particular manner of understanding the expressive features *in context*.

The results of the experiment involving segmentation tasks indicated that expressive deviations were not enough to predict the structural segmentation. It would seem to be the case that, paralleling the performance process, listeners do not organise their listening exclusively according to rules; they have to solve ambiguous problems *by interpreting* structure and expression (microstructure) as a whole. Structural and microstructural attributes are concurrent. If, as we have seen, expressive traits are the result of the intersection of multiple tensions occurring in a particular place, in a particular context, the listener also will have to contemplate these tensions in order to understand the communicated content. In that way, musical listening is also an interpretative task.

As we have just insisted, in this framework, the performer is not a mere transmitter of structural features, but interprets these features and with them constructs a new representation of the piece. This new representation is the content that he or she projects during the performance. Every expressive action, in this way, has a new and renewable contextual meaning. In that sense, results seem to confirm that performers use their expressive resources with different aims or functions, according to the context in which they act. For example, Argerich does her most important ritenuto at bar 13. However, that does not mean that she is conceiving this point as the highest hierarchical level articulation point. Listeners note the ritenuto but understand the particular use of this attribute in this context. They understand, for example, that such a ritenuto does not necessary mean phrase (formal) closure. As with a literary text, listeners have the ability to assign meaning according to context. In that way, listening to music is also an interpretative event. Thus, a piece of music requires co-operation (in terms of Eco 1979) not only from performers but also from listeners. Thinking in a musical way is on the part of the listener therefore, a cooperative activity. We can then talk about a *cooperative perspective*, where individual performance features are contextually understood, linking the context of the musical structure with the context of the interpretative microstructure.

The existence of a gap is evident between performance grammars and their derived common codes between listeners and performers, and the interpretative experience itself. An *Interpretative Paradigm* will have to account for the expressive deviation as decided by the performer as a function of his or her idea of the piece as a whole. This particular use has to be understood by the listener through the contextual appreciation of that expressive deviation.

This encourages us to go deeper into the nature of the processes involved in the cooperative tasks both of performers and listeners, in order to determine whether they are similar or if it is necessary to formulate a different hypothesis for each one. A brief epistemological exercise complements this chapter (Appendix III). It is a sort of explanation of some of the previous findings according to a framework provided by the pragmatics studies. We consider it is worth thinking of a pragmatics of music performance as an axis in the study of communication between performers and listeners.

If the listener does without the expressive information when segmenting, then the rules that organize the performance do not organize its reception at the same time. The standardized behaviours (for example the *average performance* or the segmentation data that appear to include the individual responses from a considerable group of listeners) seem to be strongly tied to characteristics that emerge from the analysis of the musical structure. Naturally, the conditions of *acceptability* for a performance that, as we have discussed above, emerge from the average performance, can be understood as being *generated* by the piece's structure itself. But, at the same time, they represent a trivial solution to the interpretative problems as the piece itself makes clear. In other words, the nature of a structure is so obviously organized in such a way that it does not require an artistic intervention to be manifested; a *standard* intervention is enough. On the contrary, it seems that the *original* performer deliberately avoids that trivial behaviour on such an obvious feature of the composition. This is a very widespread idea among performers (see, for example, Berry 1989 p. 13, 20 and following). The experiences presented here support the idea that a generative hypothesis can explain the general conditions for a performance's acceptability. Nevertheless, this search cannot advance the paradoxical acceptance of aspects related to the performance's individuality.

In the pragmatic study of language one says that the understanding of a statement (that which is spoken, with its particular syntax) derives from the possibility the speaker has of transforming it into a phrase (the writing, with its own syntax) (Bertucelli Pappi 1993). Transferring this to the field of music, it could be said that the possibility of understanding the musical structure derives from the listener's capacity to reduce the expressive components. For this, performers and listeners would have to share the knowledge of the rules of expressive performance by which expressive statements can be reduced to phrases (its manifestation in the norm).

> *"If we were able to formulate such rules explicitly and definitively, the problem of the relation between linguistic competence and performance would be solved, settling the primacy of the first over the second. If, however, we reached the conclusion that rules of this type do not exist, or that they exist but are not necessary, we will conclude that the competence that maintains the communicative interaction is supported by assumptions and principles entirely different from the grammatical ones"* (Bertucelli Pappi 1993, p.149)

This is the crux of the dilemma we are considering here, between the generative perspective and the alternative perspective/s.

However, the problem that arises has to do with the performance's expressive stamp. If the listener can ignore the expressive information to configure the music's structure in its reception, then that information is not destined *to clarify the structure,* as proposed by the objectivist perspective. To what, then, is it destined? The task of performance comparisons has not been able to offer as forceful an answer to this question as might be expected. Nevertheless, it is remarkable that the musicians that carried out this task preferred to compare the performances in terms of emotions, using terms employed by an amateur musical meta-language, instead of terms linked to musical theory or studies in performance, as the objectivist perspective had hoped. However, as Sloboda and Lehmann (2001) suggested, the participation of many emotional aspects in performance remains highly restricted both by the musical structure's features and by the contemporary performance's conventions. Nevertheless, it is doubtless the case that expression in performance has always been bound to the scope of the emotions, a relation that certain objectivist tradition preferred to avoid.

The tasks of semantic expression (Shifres 2002) suggest that this search could be oriented to the construction of narrative structures. The following chapters and particularly the experiment in chapter 10 go deeper on this. Notwithstanding, it may be highly interesting to include in this discussion the data of the presence of very similar semantic expressions between listeners and between listeners and the artist himself. For example, Alfred Cortot wrote about Chopin's prelude in B minor: "*Meditative, melancholic, autumnal, such is the Sixth Prelude. The impression that must be produced is not in fact to express the pain, but… something that one wanted to retain, and that it flees*" (1934, p.36). One of the subjects of the test wrote when listening to Cortot's performance: "*Melancholy, piano, autumn, lonely*" (male, 23 years old). Another, when listening to the Martha Argerich performance, wrote: "*Many images of blue and grey colours that demonstrate depth and give peace*"; and when listening to Cortot's he added: "*The same images but they are now moving away*" (male, 39 years old). In this sense, the coincidences around expressions such as *melancholy*, *autumn*, etc. are highly remarkable.

For their part, the results of the memory tasks of experiment 2 are more oriented towards the search of the incidence of the performance's attributes in time configuration problems in performance as part of the communicated content. The task of the overall time estimation forcefully suggest that the expressive characteristics contribute to a different temporal experience, at least quantitatively speaking. The differences found among the experimental conditions account for the overall time experience being more independent of the composition's structure and more dependent of the expression's microstructure - the opposite of what happens with the segmentation experience. The retrieval and temporal order recognition tasks, although showing weak results, allow supposing that such important aspects in the narrative structure configuration in performance such as thematic capture and thematic temporal sequence, are influenced by the expressive characteristics of the performance. All these aspects will constitute the crux of the exploration that will be approached in the following chapters.

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Summary. In this chapter two listening tests, which used the performances identified in the previous chapter, were developed in order to investigate the communication of the prolongational structure between performer and listener. The first one presented no manipulated stimuli. In the second one, the performances were manipulated by interpolating cuts and external sounds. In this case, the aim was to modify their temporal structure by superimposing a structure of temporal accents that either reinforced or contradicted the more salient timing expressive features of each performance. The results indicated that a generative hypothesis seems to be insufficient to predict the subjects' responses to the segmentation task. Moreover, the attributes used by the listeners to compare the two performances are more related to *everyday* rather than *technical* descriptions of music: listeners tend to use categories related to the emotional realm of the experience. Concerning the tasks linked to the experience of time in terms of *before* and *after,* time estimation, recognition and temporal order, findings seem to indicate that they are influenced by the particularities of the performance's expression. The data indicate that listeners are sensible to performance context. In this way, they can identify the contextual relations that give a particular *meaning* to the expressive characteristics of the performances. Consequently, the communication of expressive features seems to go beyond the establishment of a rule system around which information circulates from performer to listener. Instead of this, the concept of *interpretative criterion,* as a part of an *interpretative paradigm,* is proposed in order to consider systematicity of performer's behaviours. It is proposed that such a paradigm is also useful to understand listeners' *cooperative* activity.

Chapter 7: Towards the construction of the performance

In chapter 2 (pp. 41 and ff.) we sketched out the current scene regarding studies on music performance in which different points of view come together to strongly criticise objectivism. The questioning of an assumed deterministic relationship between musical analysis and performance is one of the most general and conspicuous traits of this criticism. The disruption of this relationship seems to show us the way towards a new context in which composition and performance, as independent activities, fail to reconnect. Questioning the musical composition as a finished work of art has led to a revisitation of issues concerning the musical work's ontology. If the musical work is not finished in the score itself, then, how much further does it extend?

7.1 Composition as material

The idea that the musical work is an abstract set of scores, performances, arrangements, etc. may be a firm point of view. However, the topic of how all of them are related at the core of the piece remains problematic. Cook (2003), to begin with, proposes abandoning the idea of a performance's conception as based on unequal vertical relationships among all those elements, to start thinking instead in terms of more horizontal relationships from whose core the construction of musical meaning emerges. The idea that "*there is no ontological distinction among the different modes of a work's existence, its different instantiations, because there is no original*" (p. 207) re-defines the scope of the musical work to the complete set of its realizations. Nevertheless, this scope, assumed in this way, far from solving the problem of the nature of these relationships (particularly the relationship between composition and performance) once again leaves the performer wandering in a field of uncertainty.

The general issue concerning the musical work's ontology deserves such extensive discussion that it would exceed the scope of this work. However, as many factors relevant to performer-listener communication fall outside the objectivist standpoint in the previous chapters, at this point that part of the ontological problem cannot be avoided. This chapter, then, presents some of the most important ideas on this issue within the current musicological arena, in particular Cook's insights on music *as* performance (2003). Soon some ideas around a definition of the relationship between performance and composition will be outlined that, following the ideas of many of the authors already mentioned (Cook 2003, Johnson 1999, Rothstein 1995, Schmaldfelt 1985, among others), allow defining an ontology of the musical work that permits understanding the performer's role in the communicational process.

When leaving behind the notion of "*the* score as *the* work", an idea from 19th century musicology, different proposals can be found in the current academic field. Cook (2003) briefly reviews some of them. For example, Bowen (1999) proposes studying the musical work from the set of its performances. Cutting himself off from the score, he focuses on the comparative analysis of performances. For this reason, this perspective does not shed light on the relationship between composition and performance. On the other hand Lester (1995) considers such a relationship, but the deterministic relation does not disappear, it only changes direction: he proposes that a performance is an analytical device that deserves to be considered in itself with the same epistemological status as a graph or an analytical description. Thus, Lester conserves the objectivist notion of a relation between composition and performance established point by point throughout the musical work. Cook also criticizes something similar in the work of Clarke (2001) and Davidson (2001), regarding the "composition"-"motion in performance" association. In short, not only the composition-performance determinism, but also all kinds of composition-performance bonds as a rigid moment-to-moment attachment is the focus of criticism. In other words, Cook is questioning any notion of the "performance *of…*", which splits the *work* from performance. The idea of the "performance *of…*", as found in the basis of romantic and objectivist performances, reduces the performance's *artistry*. But, if performance is not the "performance *of…*", what then is it? Cook proposes understanding the composition as a *script*. According to this, performance might be understood not only regarding the musicological bonds to the composition but also according to its ethnographic factors, since a script leaves room for flexible social interactions in the realization. Thus, the script allows the incorporation of the context of the performance into its realization more naturally than the rigid notion of composition as a finished work. In that way the musical work is a process and every time, each performance contributes to this process. Besides, the script is more flexible for the intervention of social relations (and what's more, it stimulates them) involved in performance. For this reason, Cook (2003) affirms that, in that way, social meaning emerges naturally in performance.

Going more deeply into this argument, and following Johnson (1999), it is proposed here to consider composition as *a material* for building the performative work. In this sense, the composition is one of the materials (among many other materials). Appendix IV explores this notion of material as suggested by the work of Marcel Proust. It is interesting to understand how this author arrived at the idea of what the material is for a performative work, since this path is very similar to the one sketched here. When considering the composition as *the material*, the performance does not *derive* from the examination of the musical structure but rather *it is created* from it. Then, for the performer, knowing the musical structure is to know the material that he or she must dominate to make his or her own work. The same material can give rise to infinitely different works, and for that reason the record industry did not do away with musical performance. In that sense, the score is not a set of directions that the performer must execute as though it were a recipe, but it is an accumulation of potential for his or her artistic accomplishment (Tanner 2000). The material allows the performer to produce meaning, by performative realizations representing unity, character, motion, etc. They promote communication with the listener at multiple levels and through multiple channels, although those realizations sometimes may contradict an *objective analysis, leading to a definitive conclusion* (Lester 1995). That is the substantial difference, referred to by Dunsby (1989), between understanding to *explain* music, and understanding to *communicate* music (see p.232). To communicate music implies the circulation of those representations the performer realizes understood as actions or as events instead of as objects.

Cook (2003) explains how recent studies of performance have led us more and more to think of each performance as an artistic accomplishment that keeps an intertextual reference with *other* performances “of the work”. He puts “the work” in inverted commas because if we say that the performance is the artwork, then it is not possible to speak of the work-performance dichotomy. Cook proposes advancing in this study by combining ethnographic approaches, musicological theoretical traditions, and computerized measurement methodologies to understand how the relationship between composition and performance works in a context of social interaction. The research proposed here clearly follows his suggestion.

7.2 Defining the composition–performance relationship

The notion of composition as a script (Cook 2003) has important advantages as compared with the idea of the *work* fixed by a text. A text is a device that *codifies* meaning whereas a script is a resource *to activate* the production of meaning. The script gives rise to an integrated meaning that contemplates all the components of the context that contribute to the production of meaning.

In spite of the advantages of the idea of a *script,* we will argue that the notion of *material* allows a better characterization of the genitive relation between composition and performance. Nevertheless it is necessary to understand precisely to what we are referring when speaking of *material* in order to avoid usurping from performance what is within composition's aesthetic scope, paradoxically denying the role of composition in the benefit of the performance's artistic quality. For this, the exploration of two key concepts may shed light on the problem.

7.2.1 Transposition

Recognizing the artistry of music performance a priori, the idea that the particularities of the musical structure established by the composer constitute the material of the performance seems almost self-evident. Nevertheless, it is necessary to characterize the performance's degree of autonomy with respect to the composition in relation to its appearance as a *finished work of art.* The comparison that Proust made between Berma's performance and Elstir's paintings (Appendix IV) shows the nature of such autonomy. When Elstir paints a school, his material presents less aesthetic integration than the material used when painting a cathedral. Such integration defines that set of features as an *artwork.* The artistic quality of the cathedral is part of the material he works with. Of course, we are dealing with the core of that material.

There is an important difference between using a material that has not been the object of a particular artistic approach (as Elstir's school building) and using a material that is in itself the result of artistic elaboration. Of course, although that difference is significant, a clear distinction between these circumstances does not exist. This point may be seen more clearly in the field of pop music. For example, let’s take the case of the performance of a Jazz *Standard*. *Standards* may be a simple sequence of chords, or the harmony that characterizes a certain composition (as is the famous case of *Les Feuilles Mortes*). The key point is: what is the stamp of this previous artwork as an independent artistic object in this new work of art?

In order to solve this point it may be useful to borrow a concept from the realm of *mass media* semiotics: the concept of *transposition.* According to Steimberg (1980) the term *transposition* was used initially within semiotics to allude to “*the mechanisms that (…) condition the reproduction of a literary or artistic work in a format or genre that is not the original*” (p. 19). In particular, semiotics has been preoccupied with *contemporary transpositions* that fundamentally talk about the reproduction of the literary work in the *mass media* (cinema, TV, radio, comic strip, etc.). Nevertheless, art historiography has taken the idea to refer to other cross-genre transfers previous to the appearance of the *mass media*, such as opera, ballet, etc. Thus, the scope of the term has been extended so as to include any reproduction of any type of artwork (not only literary) in which changes in the signifier medium take place, or the means of production. In this way, the *Mona Lisa* wallpaper of a mobile telephone is a transposition of Leonardo’s painting, in the same way that Elstir’s painting is a transposition of that gothic cathedral. Initially, the idea of *transposition* was used to differentiate it from that of *version,* which implied a reproduction without a change in the signifier medium. For example, Martin Scorsese’s film *Cape Fear* (1991) is a version of J. Lee Thompson’s (1962), since both works of art have been developed on the same signifier medium. At the same time both are transpositions of John D. MacDonald’s novel *The Executioners*. Nevertheless, it is opportune to indicate that in the scope of semiotics, these two concepts (transposition and version) have gradually modified their range and have been a matter of controversy. At present there are more than a few scholars who interpret the idea of *version* in the sense of *free version*, that is to say, as the use of some rhetorical topic coming from a work of art in particular (topoi), without needing to appropriate the entire structure of this art work. In that sense, for example, Salman Rushdie's novel *The Ground Beneath Her Feet* (1999) may be understood as a *version* of the Orpheus Myth. At any rate, entering into this controversy would be a sterile exercise for this work. Therefore, the original idea of transposition will be employed here in virtue of its utility. Also, this idea will be taken in its most general sense, not only including the transposition from a literary work, but also extending it to the reproduction of meaning on other signifier mediums in general.

According to this wider perspective, the constraints of a *transposition* are much less strict than those for a *version*. When going from one signifier medium to another, the author of the transposition is much freer to *do and undo* his creative work.

Interestingly, Steimberg (1980) affirms that the study of transposition

> *"(A)llows investigating the ways by which contemporary culture establishes bonds between the arts and apparently distanced practices, fitting meanings and assigning hierarchies in the social reading of stories and plays. In each transposition there is an interpretation of the transposed work"* (p.20)

This is directly related to Cook's idea (2003) of considering "artistic" performances as cultural manifestations that can simultaneously talk about and link multiple texts. More precisely, the concept of transposition linked to the circulation of contents in different media, goes beyond a simple historical substitution or the idea of an absolute choice between different cultural practices (Steimberg 2003). In this way, thinking of performance as transposition leads to a situation in which each performance is not simply the substitution of a previous one, trying to adapt to the new historical-cultural context. On the contrary, it is a new re-signification of the transposed work.

The transposition's freedom is responsible for altering the work's ontology, as an abstraction, according to the cultural context in which it is read. For example when we say *Carmen* we think of Bizet's Opera, more than Merimee's novel. Merimee's work is one of the most transposed literary works (Traversa 1995). In particular, Bizet's transposition has had a strong impact on its ontology. In fact, it incorporates the character of Michaela who is central in the story and at present, a structural part of the work (not something added on). Other works carried out from this material have not had such a hard impact on the work's ontology. For example, in the transposition of Saura's film (1983), Carmen kills Don José.

Here, the idea of *transposition* is going to be much more useful than that of *script*, as proposed by Cook (2003), because the latter implicitly brings to bear an imposition on the temporal dimension absent from the former. In other words, a *script* fundamentally imposes an ordered sequence of actions to be carried out in a time, at least in its narrative organization, responsible for the notion of *before and after,* which limits the performer's actions. On the contrary, transposition is freer as regards time. Thus, as set out in the following chapters, the performer's task consists of shaping the performance time in order to produce its own narratives. The performer creates meaning when configuring the performance time. Therefore, the notion of *script* will be excessively restricting to host performance's creative capacity.

One could see each transposition as a commentary, modification, correction, etc. of the work, thinking about itself throughout the successive transpositions. On the other hand, when one understands transposition as artistic creation, the habitual meaning of reproduction is reversed. The transposition recovers meanings belonging to the work that were lost or hidden in previous transpositions and introduces "*changes that are ideological fractures, in the sense that they introduce new general keys for (interpretation)*" (Steimberg 2003, p. 296).

The transposition's freedom consists of a delicate balance in which certain structural characteristics remain evident. The abandonment of those structural characteristics would render the transposition illegible as such. But at the same time, the disruption of the structural basis is necessary in order to allow attending to the current context.

The history of artistic practice has denied that freedom to the *version*. And music performance has been traditionally viewed as a *version* and not as a *transposition.* Now, is it legitimate to understand performance as a transposition of the composition? This question introduces the debate on the nature of composition itself as artistic realization. Although this topic is beyond the scope of this thesis, it is not possible to continue this research without briefly mentioning it.

7.2.2 The autonomy of performance in the light of the signifier medium

Understanding performance as the *transposition* of composition implies accepting that they have different signifier mediums. Contrarily, if we considered that they share the same signifier medium we would be speaking about *versions.* It was said that a *version* is less free concerning the impositions for its realization than a *transposition.* Probably, this strictness with *versions* is due to the fact that the notion of *version* itself is strongly tied to the supportive function of performance. If one supposes that what the composer did (seated in his or her study and writing on the stave) has the same signifier medium as an 80 musician orchestra playing on the stage in a theatre, and conducted by a person who is gesticulating in front of it, it is because one is only assigning to the latter a supportive function. Considering the work as a script, as Cook proposes (2003), still attributes a considerable *supportive function* (see chapter 2) to the performer's role.

However, is it possible to identify transference of contents through different signifiers in the path from composition to performance? It will be tried to justify the affirmative answer to this question. As was clearly expounded by Deliège (2000), in western academic musical culture "*the text put in place by culture mediates language and at the same time engenders discourse*" (p.216). The text is fundamental in the compositional heuristics. That importance becomes obvious in certain styles and particular compositional techniques, such as medieval isorhythm or 20th century serialism, and appears extremely clearly in certain works throughout different epochs (John Cage's *Atlas Eclipticalis* (1960), or Luigi Nono's *Liebeslied* (1954), are some recent cases). Nevertheless, from Guillaume de Machaut's *Ma fin est mon comencament* (14th century), works may be registered in which the written part obviously plays a fundamental role in the structure and meaning. On the matter, Deliège (2000) explains the way in which the change from the rhythmical writing based on the ancient rhythmics to a system based on proportionality generated a revolution in the conception of music. This entails that the composer operates within a signifier medium in which the writing occupies an important place. In such a sense, the written representations - as well as the computational representations in relation to computer music - can be seen as "domains of interaction" or "interfaces" in which the composer acts when designing musical processes and structures. According to Hamman (1999) these representations are resources that the composer uses in order to fulfil well-structured tasks, offering cognitively redundant patterns of action and observation. In this exercise, the score (or any other means of registration) can give rise to multiple feasible (although still non-existing) scenes. That is to say, the score is not only the representation of substantial realities, but also the scope of enunciation of not yet existing realities. The representation orients and models the interaction on which the composition is generated. (Mountain 2001).

Even more so, many of the most generalized compositional problems are often treated from the written text. Thematic organization and coherence are two of them (Deliège 2000). In addition, if this approach is considered more deeply it is possible to find a somewhat more subtle difference between which is the signifier medium of the composition, and which is that of the performance's. William Rothstein (1995) claimed to differentiate between an *analytical structure* and a *dramatic structure* of the piece. The former arises from the critical examination of the piece's constructive components (that only exposes a determinist relation remote from the problems of musical performance). The latter is a structure of tensions and characters that the performer derives from the composition and that, far from maintaining a deterministic relationship with performance, serves as the work's *staging*.

From all this, it is possible to think that the structures the composer works with are not essentially the same as those the performer handles. Music is not only made up of sound, and as well as music in composition seeming to be set up with written support, and with musical structures that are justified in theoretical structural terms, music in performance seems to be based on schemes of movement and strength, and tension-relaxation relationships that emerge from the physical domain, amongst many other things. In other words, from this perspective it is difficult to maintain that composition and performance share the same signifier medium. It is easier to conclude that the meaning circulates through different supports: we would then be qualified to understand performance in terms of transposition, and therefore to understand its autonomy and its artistry.

7.2.3 A *dialectic* structure-performance relationship

At this point, the terms of the relationship from “that which the composer did” and “what the performer does”, referred to so far as “structure” and “performance”, have to change, defining “composition” as part of the performance’s “material” understood as an independent artistic accomplishment. Nevertheless, the nature of this relation has still not been explored. Is the performer able to do anything with any material? If, as Eco says, “(if) there is something to interpret, the interpretation should speak of something that should be somewhere and that it should be in some way respected” (1992, p.47), and as Imberty (1992b) argued it should be possible, if not to speak of a correct interpretation, at least to identify when an interpretation is incorrect, then the performer as artist should find a feasible way of achieving artistic accomplishment from the material at hand. This would be the essence of the interpretative task in the current scene. Paraphrasing Todorov, “in the picnic of the musical work the composer brings the structures and the performer the meaning”, then those structures “*constitute an embarrassing handful of material evidence that (the performer) cannot let pass in silence, or noise*” (Eco 1992, p.26).

In short, it is necessary to explain why the way in which the available material is understood allows the performer to do certain things and not others. The rationalist tradition has taken us to look for logics of interpretation, both convincing and true (Berry 1989, Kivy 1995). Nevertheless, if one is operating with some material in an artistic endeavour, the production need not be logical nor convincing, but beautiful. Therefore the interpretative problem is not so related to the discussion between the idea of multiple meanings and the absence of meaning (Eco 1992), but through the understanding of the material's *potential* meaningfulness.

For this, the concept of material that Theodor W. Adorno introduced to the philosophy of music, and in particular his conception of the *dialectic of the material* (Adorno 1930), is especially useful here. Before developing this idea it is necessary to explain something. Adorno always talks about the material of the composition, and all of his references to the work corresponds to the notion of work as composition, not as performance, as we have been arguing. Doubtless, performance as an artistic event does not seem to be within Adorno's agenda, although it is interesting to indicate some ideas possibly related to this point of view. For example, he argues that the "new music" (always talking about the music of the School of Vienna) "*questions what many progressive folk expect of it: finished images in themselves, that can be admired once and forever in the musical museums, that is, in theatres and concert halls*" (1958, p.33). Although he does not explicitly recognize the performer's role in the work's *conclusive* process, he does allow one to understand that the dialectic in which the material is involved exceeds the compositional process in itself.

Adorno affirms that the composer - and, mutatis mutandi, the performer – establishes a dialectic relationship with the material. In this relationship composers are not simply "executors of material laws", but, on the contrary, they are the makers, "the sovereign structurer of the form". This structuring is supported by a dialectic between "the material's original meaning" and "the composer's position of freedom". Thus, the notion of *dialectics* has to do with the ambiguity between the artist's submission to the constraints of the material, and on the other hand, his or her independence (rebellion) with respect to those impositions. Therefore, the artistic quality of the work emerges from that dialectic.

This dialectic is, then, responsible for the fact that sometimes material that seemed to be exhausted is revitalized in the work of certain composers. Because, finally, each material is affected by the composer's individual labour. Thus, in the same way that the composer cannot act independently from the material, the material cannot be restored to its original meaning.

The artist's freedom is set apart from the work's objectivity, understood as the imposition of the material, but

> *"(t)he narrower the contact with his material, the freer will the author be … All sovereignty with which he externally intends to act upon the material, slides into the work without penetrating it, and from thence proclaims its permanence as mere faded points of view of a past history"* (Adorno 1930; p.16)

Here, the conception of musical performance as resulting from a material-work relation will be more useful than from a work-realization relation (that is to say, from the work-performance split). In this conception, the material is not only "what the composer did", as a synthesis of the structures found in the score, but also what other performers have done (that is to say, the history of that material as such), the current conditions of artistic realization, the current conditions of reception, etc., because music "*presents social problems through its own material and according to its own formal laws - problems which music contains within itself in the innermost cells of its technique*" (Adorno 1978, quoted by Cook 2003 p. 213).

Thus, the social-historical-cultural context conditions, stylistic rules, notions of epoch, *intentio auctoris, intentio èpoche*, etc. do not generate restrictions on the material, but *conform* that material with which the artist works. In this way the understanding of music is not invariable throughout time, because the psychological subject is not constant:

“*The demands imposed by the material on the subject come rather from the fact that the “material” itself is sedimented spirit, something socially preformed by man’s conscience*” (Adorno 1958; p. 34).

In this way, for example, when incorporating Michaela into *Carmen*, Bizet manifested the result of the material’s dialectic conformed by a current moral perspective (at the time of the creation of Bizet’s Opera) and a literary material that originally did not adopt that perspective: the morals of the second half of 19th century imposed a female character who could oppose Carmen’s perfidious and indecorous face with an image of purity and chastity. But, in addition, the inclusion of Michaela represents the dialectic solution of another of the material’s conflicts: the romantic opera - and in particular in mid 19th century - required a soprano in a leading role to balance the vocal registers. It can therefore be seen how the same material holds not only technical but also social and cultural problems. According to Adorno (1958), the struggle which the artist maintains with the material implies a confrontation with society, because society “has emigrated” to that material. Society is not an external factor to the work, not simply a receiver of the work, but it is the work itself. “*The warnings that the material transmits to the composer and which he transforms while obeying them, are constituted in an immanent interaction*” (p.34).

The idea of a dialectics of the material allows capturing the dynamic aspects of the work of art understood as performance, emerging from its own contexts of meaning. For example, in his study on the historical development of performance, Bowen (1999) explains how Toscanini considered Nikisch corrupt, in the same way that the present generation considers Toscanini corrupt, and possibly in the same way that future generations will consider Haitink and Harnoncourt corrupt. This *progressive* perspective of music performance is a remainder of the objectivist view, as it is seen to be very compatible with positivist thinking. This *progressive* valuation does not get to understand the nature and the materials of the *genesis* of the musical work as performance. In this sense *interpretation* is the process of understanding the material and in this way it is necessary to make *good use* of that material. Here the role of music analysis as a heuristic tool for this process is important. But, far from having a determinist objective, this musical analysis, the knowledge of certain structures based in the score, is directed to knowing the material better. In the same way that the sculptor examines the stone that is to be carved to get to know its form, its porosity, its hardness, the performer analyses a score, to understand the particularities of the structure that are its material and to be able to make *good use* of it. But such *good use* will not only depend on this. It will depend in particular on the performer's creative accomplishment.

The conversion from a conception of music as text (situated along the work-performance dichotomy) to a conception based on performance with its own artistry emerging from the dialectic relation with the materials (understood in an ample sense), requires a change in the psychological paradigm that sustains its understanding and its communication. The next chapter approaches this problem.

But in addition, what is 'making good use of the material'? What does *creative accomplishment* mean? As we have seen, it is necessary to explore these questions to see how the musical structure - and what still concerns us, that is, the prolongational structure of tonal music - can be communicated in performance - that *creative accomplishment* - to the listener. It will be argued here that such a creative accomplishment – following, on the one hand, the line of Schmaldfelt (1985) and Rothstein (1995) and on another hand the perspective of Godlovitch (1998) – has a dramatic narrative nature by virtue of the temporal incumbency of performance. This aspect will be developed in chapter 9. But, due to that temporal nature, a psychology that describes communication in terms of dance instead of the traditional metaphor of information (linear) transmission will be more suitable to the treatment of the subject, as will be seen next chapter.

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Summary. This chapter described the current performance scene, as of the criticisms to the objectivist perspective (as seen in chapter 2). This description was mainly based on the notion of composition as material, extending some aesthetic ideas related to dialectic materialism, particularly Theodor W. Adorno's notion of material. Therefore, composition was considered as the material of the performative work. From this perspective the performer does not derive his or her work from the composition but creates it from that material. In this context, the composition-performance relationship is subordinated to the concept of transposition. This is opposed to the classic notion of version from which performance has been traditionally analyzed. The idea of version restricts the performance's function. Contrarily, according to the concept of transposition, performance is extended by accomplishing compositional features and vindicating its artistry. Since transposition alludes to the mechanisms by which an artistic work is reproduced in a signifying media that is different from the original, it was necessary to show that both musical activities (performance and composition) operate on different signifying media. In that way the role of the text (the score) both in composition and performance and its implications in the attribution of artistic meaning were reviewed. Finally a dialectic composition-performance relation was outlined, accounting for how the material determines the performance and, at the same time, is permanently renewed by it.

Chapter 8: Crossmodality and intersubjectivity: looking for other channels of musical communication

Over the first chapters of the thesis, the communication of prolongational musical structures from a orthodox cognitive perspective was reviewed. It was seen that, in spite of some evidence supporting the existence of that communication, questions such as why the individuality of performance is not only accepted but also hoped for in current performances, and which is the role of the performance and reception contexts, remain unanswered. One has serious problems when trying to answer them according to the classical communicational paradigm. According to this paradigm, to communicate implies understanding the *objective* content of the message, the sender's intention and the receiver's attribution of intention. Thus, this classical scheme implies that the communicated knowledge adopts a propositional format in at least some point of the communicational channel. This is compatible with the format of knowledge in music theory, but does not correspond with other modes of music knowledge, such as listening and performing (Stubley 1992), which are strongly related to the aesthetic nature both of what is communicated and the communicational activity itself. Therefore, that scheme seems insufficient. This insufficiency will be argued as being the reason why many aspects of musical communication have been questioned, particularly those aspects of musical performance that emerge from complex interpretative processes (or that comprise complex interpretative attitudes, for instance the performance of voice leading) and include the performance of structural aspects of the musical piece in the context of a creative process in which the musical structure is only a material contributing in the organization of performance time and narrative. In addition, this scheme, disregarding the contexts of musical production and reception, does not comprise the role of the audience and listening context in the meaning process that completes communication. For this, it will be necessary to explain musical communication in other ways. Thus, the chosen route of study will consider the communication of general aesthetic phenomena and other forms of non propositional communication, particularly *affective* communication, implying non verbal factors which are involved in the psychogenetic and functional features of aesthetic sensitivity – particularly those referring to the temporal arts.

This path has motivated an increasing opposition between the classical communicational perspective and an approach that tends to see *communication as dance*, in which the emphasis in the definition of *a goal* in the communication of pre-determined *messages* is replaced by the idea of *joint doing* as a co-regulated activity in which communicative intentions emerge in their own context (Shanker and King 2002). Thus, the information transmission metaphor is replaced by a *dance metaphor*. This fixes the communicational process's focus on maintaining the feeling of rhythm and shared movements, changing from the idea of *information processing* to that of *intersubjective experience*. This change of paradigm is what can best account for the change in interpretative perspective reviewed in the previous chapter, and it has finally taken us to consider performance as an inextricable component of the musical piece that configures a narrative vision of it.

8.1 Intersubjectivity and development

The expression *intersubjectivity* is used in different psychological realms and with different scopes. In the developmental literature, it generally refers to the processes and structures which, throughout interpersonal commitments, put a subject in contact with another subject through behavioural and emotional aspects that are not explicitly manifested in the environment, but form part of the mental life – or *subjectivity* - of the other. Basically, there are three different perspectives on how we know other minds. The first, or *first person approach*, is not so relevant to our concern and will consequently not be treated here (see Gallagher 2001), where we focus instead on *second* and *third person intersubjectivity* theories.

According to Trevarthen and Hubley (1978), *intersubjectivity* implies deliberately sharing experiences about events and things. Interpersonal actions go from the open answer and action, to internal subjective states found behind manifest behaviours (Stern 1985). When this happens, the self and the other achieve subjective or internal states of experience (apart from open behaviours) which are vital for the joint experience. This kind of experience was initially studied using microanalysis techniques with filmic sequences of a large range of behavioural patterns that human babies display in the presence – and with the agreement – of an adult (Stern 1985, Trevarthen and Hubley 1978) or older children (Dunn 1998). These techniques allowed finding certain principles that govern such actions related both to emotional aspects (the baby's and the adult's) and to particularities of the interaction's temporal organization. From this Trevarthen and Hubley (1978) proposed a way of understanding intersubjectivity that, because it involves joint experiences, is named the *second person approach* (Gómez 1998).

On the other hand, Meltzoff (Gopnik and Melzoff 1999, Meltzoff and Moore 1998) has developed, in concurrence with the Theory of Mind, a hypothesis according to which an understanding of the other's subjectivity is based on some form of theoretical knowledge as to the other person's mind. Since the intersubjective experience is built from theoretical elaborations about the other's mind, it is named the *third person approach* (Gómez 1998). This approach is built from an innate capacity for imitation that allows the infant, through crossmodal association, to identify relationships between what is observed in the other and their own proprioceptive records (Beebe, Sorter *et al* 2003). Thus, as of perception and contriving similarities, infants build representations that let them *rationalize* the self and the other. This perspective is based on strong empirical evidence that the intellectual-representational activity (including discovering “mirror neurons” as Beebe, Sorter *et al* (2003) suggest) on which the intersubjective relationship is established has a very early ontogenesis. Although this perspective does not abandon the commitment of propositional knowledge both in communication and in thought, an important contribution to our concern is that knowledge about the other is based on the possibility of establishing a crossmodal relationship between evident behaviour and possible internal states.

Crossmodality is crucial in intersubjective experiences and, as will be seen in the following chapters, it is a central part in the argument about musical communication (particularly concerning the temporal experience linked to prolongational structure of tonal music). It basically refers to the capability to transfer perceptual experiences from one sensorial modality to another. It is currently accepted that certain aspects of musical performance, listening and composition resound or adjust to psychological functions developed in early childhood and are presented as developmental variations of such functions in future life. Crossmodality is one such function (Lakoff 1987; Johnson, 1987; Lakoff and Johnson, 1980, 1999; Trevarthen, 1999/2000; Zbicowsky 2002). Therefore, Meltzoff’s contribution is relevant for our topic in highlighting the importance of understanding the other by temporal (synchrony) and spatial (the format of movements) correspondences (see chapter 10, p.328).

Furthermore, behavioural evidence at very early ages (Kugiumutzakis 1998) can account for neonatal imitation as being the basis of an innate receptive consciousness (Beebe, Sorter *et al* 2003). All this evidence demonstrates that human neuronal resources are prepared to integrate the body’s perceptions and actions, eyes, face, mouth, vocal apparatus, hands, postural attitude and expressive movements with emotions and regulation states.

By contrast, the *second person intersubjectivity* approach suggests that apart from the intersubjective bond of intellectual disposition, a more emotional relation exists that is inseparable from it (Gomez 1998). According to this, the intersubjective experience involves two subjects sharing the process of capturing the other’s subjectivity. Traditionally, studies have focused on earlier ages, involving the first exchanges between infant and adult, whose interaction patterns are strongly related to a set of human behaviours that could be termed *musical.*

In this framework, Stern (1985) proposed that the link elicited in intersubjective experiences is established by the association between the attentional focus and internal states, rather than by certain bodily similarities (Bråten 1998a). Before language and conscious awareness, infants achieve certain *senses* (understood as forms of simple and non self-reflexive awareness gained through direct experience) that allow them to start differentiating the self from the other. Thus, the baby acquires a sense of time continuity, affectivity and physical cohesion, among others. In other terms, this sense of the surrounding world is achieved by *ways of feeling*. Amodal perception (which establishes the background to crossmodality) is one such way. This acquisition of the *sense* of something by direct *amodal* experience will be crucial to understand the *sense* of prolongational structure by *crossmodal* direct experience that we will propose from the experiment of chapter 10.

Vitality affects are another way of feeling. Many emotional qualities are not mirrored in the lexicon nor in the discrete categories provided by Darwinian theory. On the contrary, they are more clearly characterized in dynamic and kinetic terms: *agitation, fading, brief, explosive, crescendo, decrescendo, outburst, extended,* etc. These ways of feeling are caused by mood changes and motivational tensions. The whole set of feeling qualities is what Stern (1985) calls *vitality affects* (further ahead in his work he talks about *activation profile*).

Vitality affects are related to ways of experiencing the vital processes in the first stages of development. They are therefore amodal, involving “the whole body-mind”, and often cannot be expressed in words. Their amodal nature makes them common in all expressive modes. Therefore, they constitute the affective mode in which something is done, since they provide an emotional colour to the individual’s actions (Imberty, mentioned by Miroudot 2000).

For Stern (1985), abstract dance and music are perfect examples of the expression of vitality affects. In the presence of parental behaviour, babies are as adults before music. They do not recognize the actions as such, save in relation to the vitality affects they express.

In the context of *amodal perception*, where information is not experienced as part of a particular sensorial mode, the passage from one sensorial mode to another is not a simple translation. Rather, this process implies the conformation of an abstract and *amodal* format, which can then be recognized in any of the sensorial modalities. In this way, information can be taken from a sensorial modality and later transported in some way to another perceptual modality. Important behavioural and neurophysiological evidence reinforces this idea (Lewkowicz 1992; Lewkowicz and Kraebel 2004; Self and Zeki 2004): infants are seen to operate with abstract mental representations of perception, constituted by the most global qualities of experience, not with visions, sounds or touch, but with shapes, intensities and temporal patterns. This ability may represent the basis for future learning about the relations between different perceptual modalities and may be closely related to the psychological grounds for general communication and affective communication in particular. This is a particularly interesting point for our concerns, since we are going to suggest in chapter 10 that in our experimental undertaking, that *abstract and amodal format* may be strongly identified with the prolongational structure of musical piece.

Stern suggests that strict or true imitation is not enough to accomplish a state of communion. Rather, it is achieved when the affective state is shared without alluding to the involved behavioural expression. Thus, the concept of *attunement* refers to the reproduction of enough behavioural characteristics to reflect a determined emotional condition (clearly keeping other features aside) without imitating the open behaviour. Therefore, *attunement* is an expression of the inter-affective relation which is characterized by: (i) the presence of a kind of behavioural matching which does not constitute a faithful translation or imitation; (ii) paired behaviours linked to different perceptual modalities for which the attunement process in itself is considered a *crossmodal* process; and (iii) a matched object that is not the behaviour in itself, but some kind of feature of it that reflects an emotional condition. The matching reference is the emotional condition and not the external behavioural event. In this context "*the behavior (is viewed) as an expression and not as a sign or symbol*" (Stern 1985, p.177). Another important facet of *attunement* is that it is not consciously noticed and is practically automatic.

Attunement is part of the repertoire of behaviours integrating intuitive parenting (Papoušek, M. 1996) – the set of behaviours that adults display in the presence of infants. However, it is possible to derive some ideas from this notion. On the one hand it is reasonable to suppose that our capability of *attuning* to babies' behaviour can reach other types of relationships and partners. It is possible that many spontaneous movements and tension-relaxation games displayed in the presence of music have the same psychological origin. Moreover, this capability should be acquired early on in the ontogeny. In a longitudinal study with a baby between 12 and 24 months old, Español and Shifres (2003) described how the infant was capable of matching his personal actions (facial gestures, head movements, etc), showing a crossmodal association with certain behavioural characteristics taken from his environment (guitar sounds, melodic motives, etc.). In this context the gestures *represented* the felt pattern of the music performed by the guitar.

Thus, the idea of communication goes from a process that depends on a code in a given sensorial modality to an exchange in a multiplicity of modalities allowing for mutual closeness (Shanker and King 2002). This process reflects the role of emotion in communication, being especially explanatory of the place that music occupies for the synthesis between cognition and emotion (Sloboda 1999).

The internal states that are the object of the intersubjective experience show up as motivational impulses that mobilize the adult's and infant's actions. Each partner can reflect the other's motivations and reasons and so become involved in immediate receptive contact. According to Trevarthen (1998, 1999/2000, Trevarthen and Hubley 1978), these motivational impulses are innately organized in relatively regular temporal patterns (*Intrinsic Motive Pulse* - IMP). There is empirical evidence (Wittmann and Pöppel 1999/2000, Trevarthen 1999/2000) for the existence of a neural substrate (*Intrinsic Motive Formation* - IMF) of this temporal organization. The IMF synchronizes and balances the movements of the different body parts anticipating the effects of the actions so they can coincide in time and space in the most adjusted way.

All intersubjective regulator mechanisms are displayed over three different interaction dimensions: time, shape and intensity. Since music is also organised on theses three dimensions, they are giving intersubjective experiences an intrinsically musical character.

Because this basis is innate, Trevarthen states that intersubjectivity starts much earlier and is why he identifies two different levels or domains. *Primary intersubjectivity,* as of two months from birth, in which dyadic interpersonal communication is established in a *reciprocity subject-subject* format, in which attention and the adjustment of emotional expressions and gestures from one to the other take place producing and controlling sounds. This format basically acquires two modalities: (i) neonatal imitation and (ii) proto-conversations (or non-linguistic vocal exchanges). They both offer the dyad a sense of intimacy and proximity, present throughout normal life as a potential for the establishment of intimate approaches with others and *"to underlie higher-order modes of engagements in symbolic and conceptual mediacy"* (Bråten 1998b, p.373)

In secondary intersubjectivity, from 9 months of age (Trevarthen and Hubley 1978), the interest in *objects* is included in the dyadic interactions, sharing their manipulations, perceptions and emotions. It is, indeed, a *triangular interaction*. This interchange unfolds independently of any notion system or previous concepts, and includes joint attention to the object and shared emotional referentiality (Bråten 1998b).

8.2 Musically relevant characteristics of intersubjectivity experiences

Early intersubjective exchanges are characterized by a series of features that can be appreciated as being musical (Stern 1985, Papoušek, M. 1996, Papoušek, H. 1996, Trevarthen 1999/2000), while others contribute to understand communication in terms of dance. Some of these characteristics are: (i) mutual imitations, (ii) emotional expression interchanges, (iii) turn taking, (iv) rhythmicity, (v) melodicity, and (vi) interactive synchrony.

Intersubjective interactions are permanently changing. They themselves generate the patterns of change. The establishment of such patterns appears from mutual coactions. Likewise, communication is seen as a *continuous* unfolding of the individual action susceptible to be *continuously* modified by the *continuously* changing actions of the co-participant (Fogel 1999). This transforms the nature of our comprehension of communication. Whereas for the *information processing* paradigm the comprehension of what is being communicated takes place when the receiver decodes the sender's message (implying they both posses a common code that allows such processing), for the *intersubjective experiences* perspective mutual *"understanding is something that emerges as both partners converge on some shared feeling, thought, action, intention, etc., and develop or deploy various behaviours that signify this convergence"* (Shanker and King 2002).

Co-performer communication has similar components. For instance, Williamon and Davidson (2002) affirmed that the pianists in a duo they studied "*were able to converse 'musically', with information being given and received, modified and consolidated*" (p. 63). So it is not difficult in the interaction to see a kind of diachronic and synchronic *concertato* that evokes music making. This has taken Malloch (1999/2000) to develop the idea of *Communicative Musicality*. In this context, music is understood as a cultural artefact emerging from a natural psychological source that is *musicality*.

> *"(Musicality) seems to be an eternal, given psycho-biological need in all humans (…) The rhythmic impulse of living, moving and communicating is*

> *musical, as is the need to "tell a story" in "narrative time", a need that is inseparable from the human will to act with imagination of the consequences."* … *"musicality is the coordination of this acting emotionally, and its channelling into an imagined narrative of purposes with concern for their consequences. The moral and spiritual tone of music, or its festival vigour and passion arises from the instantaneous sympathy of a listener's response to the action of making sounds with that tempo and in that way."* (Trevarthen 1999/2000, p.157, 162)

According to Malloch (1999/2000) and Trevarthen (1999/2000) the most important features of musicality, timing, emotive expression and intersubjective sympathy, are innate. Small babies' sensibility to the musical dimensions of maternal vocalization in natural or experimental situations evidences such innate capability (Papoušek, H. 1996). This is manifested in: (1) the way in which infants can be attracted to particular accentuations and phrasing in adults' speech (Papoušek, H. 1996); (2) their ability to articulate vocalizations and gesture movements in accordance to the rhythmic regularities of adults' actions and even in their absence (Papoušek and Papoušek 1981; Murray and Trevarthen 1985); (3) their participation in "proto-conversations" – including the temporal organization of vocalization fluctuation and length – implying the coordination of different expression channels and mutual comprehension in coherent and fluent actions (Stern 1985); (4) the aural discrimination of rhythmic attributes related to tempo and rhythmic grouping patterns and the establishment of those attributes' musical preferences (Trehub 2003). The temporal relations established in the baby-adult dyad present features of synchrony, contrapuntal game and isochrony are equivalent to the characteristics of the expressive performance of music.

Significantly, communicative musicality is not music. It is a general behavioural substratum for human companionable communication that conveys shared emotions (Malloch 1999/2000). However, a series of attributes inherent in human communication are highly exploited in music: (1) pulse, (2) quality and (3) narrative permit the appearance of coordinated fellowship (Malloch 2002).

Pulse can be considered a near-universal attribute of music (Arom 2000, Snyder 2000, Cross 2001). As is known, the pulse is the basis of the clock-like experience of time (Epstein 1995). Malloch (1999/2000) demonstrated the pulsated nature of the mother-baby interaction, providing, at the same time, evidence about the *quasi-hierarchical* organization of such pulses.

Quality is linked to the melodic and timbral contours of vocalization. Babies are sensitive to these attributes (Trehub 2000, 2003), which are correlated to the shape and speed of corporal gestures. A mother's vocalization shows clear timbre differences depending on the *formal* function assigned to certain vocalizations (introduction, closure, etc). Noticeably, the mother and baby's timbre quality is linked in a sort of timbre counterpoint where the baby imitates the timbre features of the mother and proposes new ones which in turn are imitated by her. Throughout this quality game in their dialogue, mother and baby achieve understanding.

Narrative refers to a way of making *significant sequences* of organized events within a pulse and with determined quality values in a concerting game that acquires, with its own joint creation, shared meaning. These creations imply temporal units that range from tenths of a second to a few minutes. Its presence in such early and musical interactions accounts for the essential nature of narratives and human companionship and communication, as seen in the creation of joint meaning, and their strong relation with music (chapter 9).

Adult-baby interaction may be analysed according to its formal and contrapuntal structure. Moreover, its narrative structure may also be described. However, the rhythmic peculiarities of the interaction are particularly relevant here.

The word *pulse* is ever-present in any theory of rhythm, especially of musical rhythm. As mentioned before, adult-infant interactions present features of temporal periodicity that allow talking about a pulse. However, it is necessary to distinguish both notions. Merker (2002a) has remarked that the temporal (precision) ranges of pulses in intersubjective interactions are different from the temporal ranges that characterize music pulse in western and most musical cultures. The use of similar temporal ranges to musical pulse starts in the adult–baby dyad not before the 9 months of age in a mode of parenting stimulation that acquires the modality of play (named *musical play*). Rhymes, hand games, as well the kinetic, gesture and tactile contact behaviours of adults gain this higher level of temporal precision that corresponds to the temporal constraints imposed by the underlying pulse in music (see Fraisse 1982, Arom 2000). Noticeably, this attention to an underlying music pulse structure coincides in the genesis with the development of secondary intersubjectivity, characterized by joint attention to an object appearing from without the dyad. In this case the underlying pulse is constituted in the *object* that captures the dyad's attention. The incorporation of this pulse structure to the interaction implies the development of a new mechanism by which the members of the dyad temporally regulate their interactive behaviours.

Merker (2000) mentions that the mechanism based on an underlying pulse is not present in species that are phylogenetically close to Homo Sapiens. Therefore, it is possible to consider it as a human evolutionary achievement. However, it is well known that many communicational aspects of lower species seem to be based on pulsed structures of high temporal accuracy. Nevertheless, there are at least two important differences concerning the capacity humans have: (i) humans can interact with others according to an underlying pulse, making use of a comparatively wide range of pulse tempi; (ii) humans can show interchanges of emotional expressions in interactions that involve adjusting to an underlying pulse. In this way the underlying pulse mechanism has a particular motivational foundation in Homo Sapiens.

The interactive behaviour timing mechanisms in mammals look much more (concerning time accuracy) like the adult-infant dyad ones before the period just identified. These can be presented as interactive mechanisms through *reaction time* (according to which a behaviour is the consequence of the reaction to a previous action of the other dyad member) and through *familiarity* (according to which a behaviour is the result of previous knowledge of the other dyad member's behavioural patterns). These mechanisms may be related to the most primitive emotional interchanges that mainly arouse interest and pleasure (Kugiumutzakis 1998). It is important to state that although towards the first year of life the human baby acquires the capability of interacting based on an underlying pulse, the other interaction mechanisms endure into adult life. It will be argued (chapter 11) that the endurance of these mechanisms is precisely what allows us to understand the expressive nature as well as the idiosyncratic character of the time deviations originated in expressive music performance. For this it is necessary to previously look over, firstly, which is the role intersubjective experiences play in the formation of what is called an aesthetic experience, to then explore the feasibility of this mode of interaction in the interpersonal exchanges of adult life.

8.3 Intersubjectivity in the genesis of the aesthetic function

According to Ellen Dissanayake (1992, 2000a, 2000b, 2001; Dissanayake and Miall 2003) some of the characteristics of early intersubjective interactions, musical as they may be, have been, evolutionarily speaking, the result of increasingly longer altriciality, which allowed greater resources for the attention and care of the offspring, and promoted social cohesion. In particular, this demand gave rise to the *elaboration* of some affiliative behaviours aimed at extending their permanence and therefore making them more effective. *Elaboration* bears the crossmodal, temporal and dynamic modelling of the behaviour that leads to progressively extend a state of inherently pleasant mutuality (Dissanayake 2000b). Elaboration makes some features of early intersubjective interactions "break out" of the dyad, marking a course for the aesthetic imagination's phylogenesis.

In this way, *sociality and affiliative reinforcement* transform many basic behaviours. In interactions with infants numerous adult behaviours are exaggerations and repetitions of gestural, facial and vocal qualities used by adults for interactions between themselves. These would show the adult's *affiliative* intention or disposition (Dissanayake 2001). This is manifested in the process of *ritualization* by which an instrumental and daily activity is taken out of its normal context, *ritualized*, and used as a communicative signal with a completely different motivation (so as to ensure joint attention in early interactions). During this process the signal becomes unmistakable and more prominent with the purpose of drawing attention, differentiating itself from the original by presenting simpler and more formalized shapes and by *rhythmical* repetition. This involves greater motor regularity and an exaggerated use of time and space in action. As in phylogenesis, *ritualization* in ontogenesis should play an essential role in pretend play and the genesis of the symbolic function (Español in press). Interestingly, Dissanayake (2000a) suggests that *ritualization* is one of the features that "breaks out" of the specific context of adult-infant interaction and installs itself in adult life situations contributing to the reinforcement of social bonding.

The same may happen with other features of the first dyadic relations. For instance, relational imitation, which emerges from the establishment of intersubjective relations, is a cognitive mode (mimesis) whose rudiments are present from birth and which covers such varied behaviours as mirroring, matching, motor mimicry and simulation. Imitation understood in this way involves on the one hand a crossmodal correspondence in perception and on the other, a temporal correspondence in action patterns. The essence of such imitation should be modelling many "forms of acting" in adult life. In particular crossmodal, supramodal and nonverbal processes, extrapolated from the dyad, should have important implications in the evolution of aesthetic thought.

Many of the behaviours involved in normal dyadic interactions between adults and infants progressively exaggerate, pattern and ritualise themselves. This gives way to their playful use, endowing them with a meta-communicational value (in other words, the dyad members set up a sort of communicative pattern they understand as playful, not "confusing it with reality") and having a very particular structure: *repetition-variation* (Stern 1985, Imberty 1997b, 2002). In the course of this structure, attention is progressively extended and in addition the baby starts gaining control in the recognition of invariants and subtle changes. In this way the game becomes a field for comparison. Thus, the *repetition-variation structure* confers time a sort of embodiment. Time is organized in one direction and establishes the *before and after* pattern which is central to narrative perception of time. Music (as narrative, see Chapter 9) is based on this temporal nature (Epstein 1995, Ricoeur 1985) in addition to its *clock-like* nature. Through the *repetition-variation* structure we *learn to gain knowledge* in early childhood in a *mode* that persists in adult life, although overridden by language. As Dissanayake (2001) remarks, this *mode* resembles the methods of the performing arts.

From this point of view, the author suggests that responses to music and emotional narrations have common origins in early interactions. In addition, when relating early interactions to the phylogenetic origin of the human aesthetic experience, she is not only pointing out the importance of intersubjective experiences in the adapted mind but also the remote origin of the aesthetic experience.

Extending these ideas, Español (in press) suggests that it is possible to identify this “breaking out of the dyad” in the context of ontogeny. In a longitudinal observational study, she describes how imitative, ritualised and repeated-varied behaviours break out of the dyadic interaction context, connect with objects, stimuli, environmental and internal signals, *elaborate* and become intrinsically pleasant behaviours. Her contribution involves two important facts. The first is the distinction between motion and action. While motion has an emotional motive, during an action motivation is intentional. Concomitantly, motion prepares for emotional appreciation, and action for intentional appreciation. The elaboration of motion should play a key role in the establishment of an action sequence, contributing an organization of time *in movement* that can be understood in narrative terms.

The second of Español’s contributions is the incorporation of sequences of regular motion with a high level of temporal accuracy to the playful context in which the symbolic-fictional capability develops. Shifres and Español (2004) observed that from all the particular characteristics of primary intersubjective experiences (interchanges of emotional expressions, turn taking, rhythmicity, melodicity, etc) interactive synchrony seems not to be present – in a subsequent stage – in the appearance of pretend play. Nevertheless, another modality of play introduces a wedge in the playful context, where the involved subjects achieve a state of empathy around an underlying pulse, organizing their joint actions in interactive synchrony. Following Merker (2002a), they have called these playful instances *musical play*. While observing 24 and 36 month-old children, Shifres *et al* (2004) could identify at least three types of musical components present in the genesis of pretend play: (i) protomusical components or remainders of the musical aspects of intuitive parenting; (ii) pseudo-musical components or music structures instrumentally taken for pretend play; and (iii) musical components in themselves, or *musical play*. In this context, protomusical attributes contribute to reinforce the sense of shared expression and emotion and, in this way, strengthen the bond during playful activity. But *musical components,* in the form of *musical play*, seem to have another role. It was observed that *musical play* alternates with fictional situations in the playful context (Shifres and Español 2004). When this happens they found that the prime sequence is *pretend play-musical play-pretend play*. Interestingly, the regular rhythmic pattern characteristic of musical play is incorporated into the succeeding pretend play with a different meaning. Thus, as they concluded, *musical play* enriches and extends *pretend play*. The *musical play* modality invades pretend play, shifting its thematic content and replacing it with semantically vague actions and representations that would leave some form of new signifiers in the infant's mind, later to re-signify themselves in pretend play. These will serve the narrative-fictional sequences contributing to temporally organize the experience and to thematically unfold the fictional scene.

It is proposed here that this way of making use of the musical structure is similar to when performers rehearse their performances – take an abstract musical structure (for example the prolongational structure) and put it at the service of narrative – and that that imaginative modality is prepared in our early interactions.

8.4 Other types of intersubjective experiences

We have examined the notion of intersubjectivity in development. However, other studies have successfully used this concept in other domains (i.e. see Beebe, Knoblauch *et al* 2003). Bråten (1998b) suggests that an important contribution of this approach to developmental psychology is it considers that the initial level characteristics of development preserve their operative character in subsequent normal development. Therefore, it is possible to expect the arousal of any behavioural feature distinctive of these early developmental levels in later levels, in situations that jeopardize aspects of non-verbal communication or *self-other* divisions, amongst others. In addition, as in general terms the Cartesian vision of a solipsistic mind is severely questioned nowadays, mind issues tend to be seen as problems of intersubjectivity (Kirschner 2003). However, some contexts are particularly sensitive to the intersubjective approach due to their entailing the communication of internal states and approaching epistemological objects that present a great variety of manifestations and personal meaning, as is the case in music.

Interestingly, some studies in ethnomusicology show musical situations in which the variables that participate in intersubjective experiences have a crucial role. Zeranska-Kominek (1992) explained the *mukam* of Turkmenistan as an exponent of what she called *evolutionary musical thinking*. This conception of music composition consists of the peculiar strategy of composition in real time. Although it seems to be "*on extreme individualism and emotionality (...) creation of music is oriented towards the listener and is entirely determined by the listener's perception of it.*"(p. 250). The performance demonstrates the particular way in which musical pacing *is related* to the listener's perception at that particular moment. Performance can be described as a dynamic growing process principally determined more by emotion than by any other preconceived structure. In this way, compositional technique is affected by the effect of each note in the real time process. The use of particular modal structures, the structural organization of rhythmic-melodic patterns (segmentation, repetition, etc) as well as the unfolding of details and nuances capture the listeners' attention and give them a pleasant experience, guaranteeing a sense of composition coherence as a whole. If one thinks that a Turkmen music *concert* can last up to 8 hours, these goals become a matter of powerful motivation.

At the other end of the world, Liska (2006) studied tango dance phenomena in Buenos Aires *milongas* (dance clubs) from a generational perspective. She found that older dancers (more than 80 years old) could discriminate the stylistic variables of the different *typical orchestras* (tango orchestras) and could for that reason adjust the steps and figure choreographies to the particularities of the musical arrangement. She concludes by saying that these greater subtleties in the dance variables in accordance with the performance particularities originate from the older dancers having developed their dancing skills at a time when people danced in the *milongas* to live music. This circumstance gave the *milongueros* (dancers attending a *milonga*) knowledge of the idiosyncratic performative features of each orchestra, which is very difficult to acquire from the recorded performances. One of her informers mentions that at the time of the *typical orchestras* it was not only the dancers who would pay attention to the orchestra's performance, but the latter would also attend to the dancers' steps. In that way, communication between performers and dancers was very close and would allow for more profound, mutual emotional knowledge. These two examples provide some evidence for considering the performer-listener relationship (in performance) as an intersubjectivity experience.

More specifically, Malloch (2002) has suggested that the interaction model proposed as *communicative musicality* underlies many human interactions, for example interactions between client and therapist (Trevarthen and Malloch 2000), and between teacher and pupil in the classroom. Similarly, Schögler (1999/2000) studied the interactions that occur in a jazz duet at a temporal regulation level. He presented behavioural evidence for asserting that those jazz musicians use similar communicational resources to the ones used by babies to communicate with their caretakers. In particular, “time sharing” (sharing a way of feeling and structuring the time experience) is what leads to awareness of the other, their motivations, purposes and interests. When musicians act in synchrony they *understand each other* without the need to account for the intention, content of the message or awareness of the other’s intention (as the classical communicational scheme would require). In addition, this shared representation is what permits the development of the symbolic and imaginative capacity that transforms communication into art. Musical expression is carried out through shared rhythm in the same way as the mother-infant interaction. In addition, synchronization allows the jazz duet to maintain the musical piece’s *dramatic* coherence since it gives rise to an agreement in the moments of the piece where changes are produced. It is important to mention that this synchrony contributes to organize the composition’s narrative sequence in terms of the *before-after* temporal experience, reinforcing the communicative process (Schögler 1999/2000, p-86).

Furthermore, Trevarthen and Schögler (2002) proposed that this communication is possible because rhythm and mimetic sympathy embody thinking and action time. Timing and gesture (movement) are therefore two key aspects of intersubjective experiences that reach beyond childhood. They both contribute to the organization of the temporal experience and they crossmodally link the experience of (musical) time to subjective *ways of feeling*.

Music performance, as a performative art, is a field in which the relation between the temporal and kinetic experience is *naturally* strong (Shove and Repp 1995; Davidson 1993; Salgado Correia 2006, 1999; Clarke 2001). This is another reason for understanding almost axiomatically that music performance can be understood as an intersubjective experience. During the performance of a piece of music, performers manipulate their timing and these then become the object of joint attention shared with the listener. After this, it will be proposed in chapter 11 (p. 374) that in further emotional interactions the diverse mechanisms of interactive temporal regulation create joy and interest towards the object's details – the music – focusing both dyad members' attention and maintaining it during the (musical) object's temporal development. Furthermore, it is possible that once the attention is centred on the music, the emotional communication originated from the activation of these mechanisms does not require the real presence of the other dyad member, giving way to a sort of *virtual other* (Murray and Trevarthen 1985; Bråten 1998c).

However, if the timing mechanisms are the strongest data available to say that music performance can be understood as an intersubjective experience, it is necessary to find evidence of the commonalities between the time regulating mechanisms present in music performance and in mother-infant interactions. During early adult-infant interactions an *invariant extraction* process (Stern 1985) takes place. According to Stern one of the most important invariants is the *coherence in timing structure*. During the course of it the baby can identify elements that share a temporal structure. The baby can thereby identify that a gesture (movement) connects with a certain vocalization because it can identify the common temporal structure to both patterns. Many works show that the perception of two simultaneous behaviours with the same temporal structure is important for communication in music performance (Davidson 1993; Correa Salgado 2001). Yet little is known about the extraction of invariants, in particular of the *coherence of the timing structure*, in non-simultaneous behaviours. To determine whether this process takes place, it is first necessary to identify the presence of expressive invariants in the performer. This means verifying the existence of the *coherence of the timing structure* in expressive music performances.

In an experiment with professional singers, Shifres (2004) studied (i) whether a coherent timing structure remains throughout successive performances even when it obeys different expressive intentions and (ii) the extent to which this coherence is shared by different performers. The study involved examining the timing structure of several performances by the same performer who sought different interpretations compared to those of other performers in a similar situation.

Four professional singers were each asked to sing 4 times, *a capella,* Schumann's Lied *Auf einer Burg* from the *Liederkreis Op. 39*. They were asked to include all the interpretation variations they would consider necessary to obtain a finished performance; these would of course include timing variations. Any instruction about expressive variations was purposely avoided in order not to force performances that would not fit the interpretative idea of the composition each singer already had. The recordings were analysed from two perspectives: (i) regarding macro-timing – the tempi of each Lied's phrase was measured – and (ii) regarding micro-timing – the timing of each version was measured according to the IOI deviation percentage with respect to the nominal value prescribed by the score.

The results showed the existence of temporal invariants in expressive performances that determine the *coherence of the timing structure*. Interestingly, these invariants seem to belong to the micro-timing structure more than to the macro-timing one, since the overall relations of tempo do not seem to be as associated between the different performances in a same performer. Even in the cases where the singers looked for other expressions through obvious tempo changes with very different macro-timing pattern changes, the micro-timing structure remained pronouncedly invariant. In this way, as in early interactions, these invariants are probably unconscious.

Another important fact is that the invariant behaviours found are idiosyncratic. A principal component factor analysis produced two factors that represent the performances of the different singers. None of the singers had a version more strongly linked to either of the factors, this means they identified with only one of the factors, and this reveals its individual character beyond the particular features of the piece's musical structure. These results reinforce the idea that the *coherence of the timing structure*, as one of the features of early adult-infant interactions, remains in expressive and sophisticated behaviours that adults display in other types of interaction.

More recently, Shifres (2006) used those song performances and asked 10 pianists to accompany 4 of them in a rehearsal session according to 3 experimental conditions: (i) *normal familiarization* (the 4 performances were the same singer's different recordings); (ii) *intensified familiarization* (the 4 performances were the electronic repetition of one performance); and (iii) *attenuated familiarization* (the 4 performances were randomly chosen among the different singers). Although his results are preliminary, some evidence of the existence of the three interactive behavioural timing mechanisms proposed by Merker (2002a) was found in a particular succession. One could appreciate that the pianists first tended to synchronize with the recorded singer based on the underlying pulse. But then, when they realized that singers break such regularity, they tended to *follow them*, synchronizing by time-reaction. Finally, when they were already familiarized with singers' timing, they synchronized by familiarization.

This evidence supports Schögler's proposal (1999/2000) according to which the performer uses their earliest communicational resources in performance, and can be extended to expression in the performance of pieces from the academic repertoire.

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Summary. The *dance metaphor* arose as an alternative to the *information-transmission metaphor* in many studies on communication (nonverbal communication in particular). From this perspective, communication is considered as occurring in *intersubjectivity* contexts, that is, in contexts in which subjects share non-propositional contents such as ways of feeling, attention, movements, etc. The concept of intersubjectivity is used in numerous realms, but it has been strongly employed in the field of developmental psychology. Early adult-infant interactions are conspicuous intersubjective experiences. In particular, these interactions express the phylogenetic and ontogenetic foundations for the development of the arts. These interactions are considered typically musical due to their behavioural features. Above all, it is possible to recognize rhythmic and metric traits as well as some attributes related to sound quality. This fact has led scholars to outline the concept of *Communicative Musicality*: the (innate) ability of getting on with another through rhythm and gesture contour (motor and sound). This ability, which is in the foundations of many human communicational behaviours, would be crucial in musical communication. It is based on very sophisticated mechanisms for the *interactive timing*. This interactive timing facilitates the emergence of states of *intersubjective communion*. The intersubjectivity approach allows interpreting communication beyond the adult-infant dyad, as demonstrates an increasing body of studies examining communication in multiple *musical dyads*, such as jazz improvisers, dancers and accompanying musicians, singers and pianists, etc. Some studies also allow appreciating the existence (and extraction) of temporal invariants in expressive behaviours, characteristic of adult-infant interactions in contexts of relations between adults. The intersubjective communicational perspective may shed light on music communication even though there may not be any explicit content or manifest intention. In the same way, in this framework, it is not necessary to identify a communicational intention for the interchange to occur. As this may be the case when prolongational structure is involved in performer-listeners communication, this perspective will be the theoretical support of the experiment developed in chapter 10.

Chapter 9: Music performance as narrative

> *"the over-positive spirits and the idealist spirits hold (synaesthesia) in certain disrepute; some, like Max Nordau, consider it a sign of regression towards the times in which the senses of the human species were not differentiated and were confused with touch; others (generally musicians, preferably inclined towards metaphysics) revolt at the thought of an art's splendour not consisting first and foremost of its purity: they seem to consider sacrilegious the idea that, for example, a symphony can be valued in a different concept than as an edification of sonorities that have in themselves their origin and aim; they speak of music like those mathematicians who absolutely want mathematics to have been born by itself, outside from all sensitive experience, and that it should not have any further aim than itself outside from any practical application. These mathematicians forget that when they were young they reasoned just like that girl who was taught that 4 and 5 is 9, and then immediately asked: "Nine what?" In the same way musicians forget that they too asked when listening to a Chopin Nocturne, what was that piece representing, and likewise forget that they would dance in the hall when their aunt played Mozart's sonatas on the piano"*
> Jean D' Udine

> *"...telling stories may be something more than mere fun... Something fundamental, something the very existence of a people depends on."*
> Mario Vargas Llosa

9.1 Introduction

It was seen in chapter 2 that in postmodern times audiences consider the performer and the performance as *the* work of art. In fact, audiences still prefer any form of *live* musical performance; even *virtual live musical performances,* which are manifested in the numerous existing recordings of live concerts (often giving up sound quality). This ontological status of music as performance is supported by a psychology that understands communication as *communion,* replacing the metaphor of information transmission by the dance metaphor to explain it. Thus, music should not only be understood as suitably organized information *packs* as suggested by classical cognitive science, but also as ways of organizing musical substance, able to be shared in action. Given the importance of the temporal dimension, and shared time in the musical experience, it will be proposed here that such organization may be denominated *narrative* in the light of current narratological discussion. In turn, the narratological perspective may find a place for the prolongational structure in the relation between music performance and the listener's experience.

It was also seen (chapter 3) that the prolongational structure could be considered as being different epistemological objects. The classical perspective imposes the idea that prolongation is to be considered as an *object*. Thus, we experience its *objective* structure. Contrarily, a psychology centred on *ways of sharing* will focus on the temporal structure that events (stimuli) are able to elicit. The conception of narrative as "*a set of temporal experiences* that should be shared" (Ricoeur 1985; p.536, added emphasis) therefore shows significant affinity with the study of intersubjectivity.

Narrative may be considered as a particular way of knowing, understanding and configuring the musical experience that has the potential of assigning meaning to music (Pederson 1996). Nevertheless, musical narrativity is a controversial topic in current musicology. As a correct treatment of the subject would widely exceed the frame of this work, the topic will be considered here only as a new meeting point between psychology and musicology, regardless of the objectivist perspective, gathering criticisms from the new musicology (chapters 2 and 7) and contributions by developmental psychology and communication approaches (chapter 8). First, certain terms of the debate are defined. Shortly after, this chapter focuses on the musicological perspective in favour of narrativity in music. Further ahead some structural, functional and genetic foundations of narrative as a way of knowing will be briefly presented. Finally, the pertinence of the idea of music performance as narrative to some topics concerning both performer-listener communication and performance realization will be discussed.

9.2 Narrativity in music

Topics of narrativity and meaning in music appear to be interlocked. Music does not have words and does not seem to have outer references (Petrobelli and Rostagno 2004). Nevertheless, the concern of narrativity in music emerges from the affinities between musical discourse and literary story. For Newcomb (1987), one of the pioneers in this approach, narratology has the advantage of dealing with long term signifying units, instead of focusing on a sort of semantic mapping of the minimal units and their paradigmatic and syntagmatic relations (as intended by the semiology of music (Nattiez 1987)) or their semantic relations (as proposed by the semiotics of music (Monelle 1992)). On the contrary, narratology relates *meaning* to the macrostructure.

The examination of narrative pertinence in music has been approached mainly in two different ways (Almen 2005): On the one hand, the notion of literary narrative is taken in its pure state and attributes in the musical field compatible with attributes of the former are identified. This perspective is linked to the philosophy of music and musical criticism, leaving the problem of musical meaning confined to the semiology of music – of strong linguistic concern (Nattiez 1990; Maus 1997b). On the other hand, the approach parallels literary and musical practices, since they share certain foundations and common processes. This view is partly related to the narratological studies that see narrative as process, and inquire as to the particularities of those processes that differentiate narrative from other literary genres. This perspective is more associated with psychology and the anthropology of music, and here, the problem of meaning is approached from a wide semiotic perspective touching psychological and sociological aspects.

The first approach, due to its semantic anchoring, is naturally more pessimistic: it basically considers that it is not possible to speak of narrativity in music. On the contrary, the second approach (i) emphasizes temporality as the essential component of any narrative undertaking; (ii) gives a broad conception of narrativity, beginning from the temporal experience of the human being that colonizes manifold human activities, instead of just from the literary experience; (iii) establishes when and how music makes use of those temporal components, giving rise to a differentiation between more and less narrative musics; and (iv) offers useful strategies to integrate narrative theory with historical and analytical studies (Almen 2005)

9.3 The sceptical position

For Lawrence Kramer (quoted by Pederson 1996) a musical narratology is impossible. Nevertheless, he proposes exploring narrative elements without going deeply into structuralist narratology. Those elements are: (i) *narratographic*, or narrative projected within discourses on music. Strictly speaking, the narratographic element would be the musical properties by which it is reasonable and sensible to explain music in those terms. In other terms, the narratographic elements are those properties that *encourage* talking about music in a narrative format (the *narratographic effects* of music). Thus, for example, it emerges in musical analysis texts. (ii) *Narrativity*, or quality that distinguishes the narrative from the non-narrative. Narrativity is the musical piece's potential for being narrated through action, for being performed, exerting a concrete influence on the real world in which it is being performed. Thus, *narrativity* and *performativity* are associated. (iii) *Narrative itself* alludes to the musical manifestation that proffers, complements or accompanies a verbal story.

In turn, Nattiez (1990) also affirms that music cannot be narrative. His reasons allude to the fact that music cannot express itself through some type of metalanguage. If music is a set of actions in the course of time, and narrative is no more than the story of a set of actions in the course of time, then a metalanguage is necessary for the narrative to emerge. Thus, there are reasons of a discursive nature that distinguish problems of literary narrative from musical discourse issues. Among those reasons, the issue of *meaning* impedes establishing causal relationships between events. However (i) why does Nattiez differentiate historical narration from fictional narration, since in both, the plot implies causal relationships? And (ii) why does he deny a causal bond to musical organization, being that, especially for music of the common practice period, causal bonds are usually accepted by many compositional theories? Nattiez limits his concept of narrative to a kind of *explanatory text*, which also does not include many aspects of literary narration, leaving out interpretation, metaphor, symbolization, imagination and the like. He ignores the reader’s activity. Probably, this conceptual limitation derives from his ontological perspective in examining music, which limits the psychological incumbency of musicology (Nattiez 1987). Contradictorily, he founds his view on a quasi-experimental style of psychology. He asked about three hundred children to listen to Paul Dukas’ *The Sorcerer’s Apprentice* and asked them to “tell the story”. Three relevant conclusions emerged from these data: (i) children identified the macro-formal organization and tied it to their narratives; (ii) *characters* in those narratives were not linked to (musically) thematic aspects; and (iii) a pattern of *calm/agitation/calm* emerged from the narratives. According to Nattiez, this evidence does not show a musical narrative but speaks about a plot imagined and constructed by the listener from elements found in music. With this conclusion he reaffirms that his analysis eludes any psychological incumbency. Remarkably, such a wide restriction to the concept of narrative questions any type of narration, even a literary one.

For that reason Nattiez disapproves of Newcomb’s confusing of *narrative structure* with a *culturally typified behavioural scheme*. But, if a narrative is not that, then his concept of narrative is extremely narrow. Nattiez condemns musical narrative because any attempt of *following* a narrative in music implies *interpretation*, ignoring that the problem of interpretation and over-interpretation is *the problem* of literary narrative (Eco 1992).

This view comes from understanding musical narrative as derived from literary narrative: music *imitates*, *adopts the appearance* of literary form. Finally, the contradiction is made explicit when he argues that music can be recognized as "*a mode of narration*". Clearly, if it is *a mode*, therefore *it is narration*, although other modes may exist.

Thus, this sceptical perspective is based on two pillars: (i) a conception of music unrelated from a psychological subject, supported on an abstraction, the neutral level, distinct from the experiential. Thence, musical understanding is only possible through paradigmatization (which is Nattiez's political preoccupation: to demonstrate that his theoretical corpus is *the* way to approach music). Difficulties for acknowledging the "discourse content" have to do with this theoretical (probably, ideological) limitation. (ii) A *folk* conception of narrative rather than a disciplinarily documented one. From this *commonsense* conception he ignores the debate about narrative as human activity, its psychological incumbency and its anthropological implications (Abott 2001, Tooby and Cosmides 2001).

When going deeper into the narrative concept as currently considered, many of the *sceptical* arguments lose strength (Almen 2005):

(i) *Needing a verbal indication for* listening to *a narration.* This idea loses force when considering that listening to conventionalised forms (a sonata for example) also receives an important impulse from the indication offered by the denomination.

(ii) *Absence of causal relations.* It was seen that in the context of tonal music, this argument is fallacious, since analytical compositional techniques (as opposed to associative ones) establish strong causal bonds between musical events.

(iii) *Absence of a narrator.* The presence of a narrator would fulfil two basic functions: (a) generating the past tense of the story, and (b) organizing plot coherence, beyond any chronological order. Almen (2005) considers that the first function is not a requisite for defining narrative, since there are multiple forms of establishing temporal distinctions. From an anthropological perspective, the requirement of the past tense (Abbate 1990) is also deceptive. In many cultures, whose linguistic structure lacks a past tense, narrative is not only possible but also essential (Solís Fonseca 1998).

Further ahead, it will be proposed that the crucial function of the narrator is to guide the narration as a shared experience, giving rise to the presence of an *other*. The psycho-anthropological perspective of narrative allows this view of the narrator. Thus, the narrator's function may be identified with the performer's role, from which the "necessary temporal distinctions" for such an identification emerge.

9.4 The optimistic perspective

A parallel perspective of narrativity in music and literature shows: (i) a set of topics originated in literary fields that require to be reviewed in the musical field. It clearly constitutes a musicological view, although, as will be seen, it has a psychological bias. This point is treated in this section. (ii) A set of topics approached in parallel by both disciplines, which clearly show the strong psychological incumbency of narrative. This is considered in the next section.

There are two central subjects in treating literary narrative that ought to be re-examined in speaking of musical narrative: (i) the *plot*, or the internal disposition and bonds among the story's constituting parts or events; (ii) the *agency*, referring to the agent who realizes the actions that mobilize the story. From a compositional point of view, both aspects are traditionally related to musical morphology (musical form, motivic elaboration, etc.). Therefore, they clearly depend on the musical style involved (Newcomb 1987, Micznik 2001). For that reason, studies on musical narrative tend to focus on certain styles, authors and even particular works, rather than undertaking more universal studies. Such is the case in the resurgence of this theme in musicological literature at the beginning of this century (Mizcnik 2001, Klein 2004, McDonald 2004, Raphael 2004), after almost 10 years of scarce scholarly output. Although this particularistic perspective has been the object of criticism (Maus 1997b), it is in effect the approach adopted in this thesis. However, the discussion about nomothetic vs. idiographic explanations has colonized the entire musicological field. For that reason it also affects the examination, use and validation of the prolongational structure both as structural constituent and analytical model.

9.4.1 Plot

In order to examine music as narrative, Newcomb (1987) started from a structuralist point of view (based on the Russian formalist school, Propp's analysis of folk stories in particular, and Levi Strauss' studies on the structure of myths). But he also took one of Ricouer's (1985) psychological assertions: the crucial role of the activity of the subject who *follows the narrative thread* in the narrative definition of a text. From all this, his most important contributions are (i) to have glimpsed the analogy between the narratological method of extracting structural commonalities between texts considered as narrative, and the musicological method of extracting commonalities between archetypical musical sequences that are traditionally denominated musical forms; and (ii) to have speculated about the role of *following the thread* in the stability of the musical form as an *a priori* structure. In this way, he argued that narrative emerges from the organization of events according to which each event takes and exhibits a certain *function*. This organization is the *paradigmatic or archetypical plot* and although the inner content of the events change, their function in the succession always remains the same. Interestingly, the archetypical convention, that is to say, the way in which a given formal structure becomes a narrative organization, takes place on every structural level (macro-form, period, phrase, etc.). Thus, the paradigmatic organization may also emerge in the way in which a consequent follows an antecedent, a melodic sequence is completed, the symmetry relations between phrases are settled, and so on. As of the establishment of these archetypical forms, *following the thread* becomes more demanding and therefore over-activated when the compositional structure *problematizes* (taking Newcomb's term, *problematization*) such archetypes. In this way, for example, 20th century music proposes a deep change in the employed narrative strategies with respect to 18th century music.

Briefly, narrative is shaped from the tension between the paradigmatic plot to which the work is attached (and which is relatively easily recognizable by the listener) and the successive alterations to that paradigm which the work proposes as it takes place. Those alterations can either be syntactic (relative to the structure of the parts, the amount of parts, etc.) or functional (for example, to wait for a consequent that finally does not occur; transitional sections that become more stable than the episode; etc.). That is to say, the composer guarantees first that the composition clearly attaches itself to the archetype, for example, a *rondo*, with the intention of putting it *upside down* with what is to follow. In this way the "*attentive listener is forced to move beyond static recognition of formal schemata to [the] dynamic questioning [of] formal procedures*" (Newcomb 1987, p.174).

Thus, Newcomb subordinates the narrative to the knowledge of formal archetypes. Thus, "*the attentive listener*" is in fact a listener formed in 19th century musicology, from where these formal archetypes arose. For this reason he affirms that musical narrative increased as the 19th century went by, because what happened in the course of that century was the problematization of the classical form as proposed by musicology at this time.

In spite of this severe restriction, Newcomb's proposal is of a wider scope. The tension between the paradigmatic plot and its successive alterations is temporal by nature. Since it governs the musical work's long-term issues we could name it *macro-temporal tension.* This macro-temporal tension is built on the listeners' need of not being taken by what they expects in order to "follow the story", that which *indeed is* coming.

In this direction, it is possible to think that, as musical narrative, through the *paradigmatic plot*, can reach different levels of the formal structure, it can also colonize different structural aspects. For example, Patrick McCreless (mentioned by Pederson 1996) uses the Schenkerian organicist conception to propose a possible principle of implied musical narrative in the notion of tonal closure. Here the tensions are provoked between the expected tonal patterns and those actually carried out. This has to do with the key point of the plot definition according to Ricouer (1985), who says that the very concept of *plot* is supported by the idea of *order*.

Thus, plot is the structural conformation of what is being told. In narratology theory, what is told is the *story*, and the structural arrangement by means of which this is told is the *discourse* (White 1981). But, in music, what is "*what is told*"? The tradition of *absolute music* (Dahlhaus 1978) would ratify that what is told corresponds to the structural attributes and relations (motifs, keys, modulations, rhythms, etc.). If a composition may be structurally described in more than one way, then we could say that we have a single discourse telling different stories. This is the narrative possibility that Maus considers (quoted by Pederson 1996). Nevertheless, it is evident that the musical metalanguage (in this case each analytical description) is the narrative rather than the music itself. For that reason Maus (1997a) talks about the *dramatic* potential of music, rather than its *narrative* quality.

This proximity between musical narrative and the narrative of language about music has probably been the cause for which many of the proposals supporting a musical narrative are mainly directed to function as compositional models of analysis. On the contrary, narrative may be understood as a mode of experiencing music (a mode of musical knowing). However, as structuralist narratology has been founded on the supposition that plot is built from actions and incidents found by the reader throughout the discourse (Culler mentioned by Newcomb 1987), it is necessary to refer to the question of *agency*.

9.4.2 Agency

Agency refers to the identification of the *agent* of the narrated action. For some scholars, agency has to do with the composition’s features and the way these are related. For others, agency is, in fact, imposed by the listener. The idea that the musical surface can be understood as an arena in which different actors play their roles (Tarasti 1994) makes us consider that narrative is in fact a capacity of the listener that allows him to interpret musical events in anthropomorphic terms (Maus 1997a). As was seen in chapter 3 (p. 82) the anthropomorphic hypothesis has been experimentally explored (Watt and Ash 1998) and theoretically discussed in the light of a psychological perspective of musical meaning (Sloboda 1998). Nevertheless in these arguments it is not clear whether the anthropomorphic interpretation is part of the understanding of musical phenomena (an genuinely psychological aspect) or if it is a rhetorical resource to describe such understanding (a problem of musicological discourse).

For example, Maus (1997a) emphasizes the role of the listener in transforming musical events into a narrative of human actions. Therefore, he understands that narrative is not in music but in the listener's response to the *dramatic* characteristics of music. In other words, the analysis *narrativizes* (a term of Nattiez's) the sequence of dramatic actions throughout the piece. Evidently, Maus is not using a psychological viewpoint in his foundation of the notion of narrative in music.

In turn, Tarasti (1994) proposes that the musical piece is generated from the way in which musical motifs *act*, in the same way as *actors* both participate and generate the play (in drama). In his more dramatic than narrative suggestion, the narrator is absent. When seeing the musical piece from this perspective, the work may be analysed in terms of those *actions.* Such is the *actantial* analysis of the piece. What happens in the course of the piece is not understood as linear narrative but rather as a sort of alternation "*between Being and Doing, between tension and rest, between dissonance and consonance*" (quoted by Pederson 1996, p. 185). According to this proposal, in general terms, *actions* in tonal music have to do with conflicts often derived from short-term harmonic distances. Thus, his *actantial* analysis is a type of *semiotic mapping* of the musical surface. According to Tarasti, that which is structural in music is in its surface meaning.

Mizcnik's contribution (2001) follows this line. Although she does not mention it, she seems to explicitly understand the problem of agency in terms of the nature of the used motivic materials and the way in which transformations of such materials in the course of the composition operate. Motivic transformation reinforces the motif's semantic content. Therefore when the motivic elaboration, rather than the tonal development, maintains the work’s plot (as happens in 19th century pieces as opposed to more classical forms) a higher degree of narrativity becomes manifest. As one of the variables considered is the nature of the material itself, it is the material that impels the narrative content of the piece. The more independent the compositional materials are from standardized organizational structures, the more probable the music will sound *more narrative*. In other words, the narrative quality of the piece depends on the material’s identity, characterization, and transformational potential.

According to Hatten (2001, lecture 7) agency is related to *gesture*, because in considering musical events as *gestures* the reference to the performer of these gestures cannot be avoided. He argues: “*Gesture (…) communicates information about the gesturer (or character, or person the gesturer is impersonating or embodying).*” (n.p) Opposed musical gestures imply both protagonist and antagonist roles. Performance may also give rise to other types of agency when the performer *narrates* the composition…

> *“Directing the listener's attention (possibly over-didactically) to the structure and significance of events, although not changing or reordering the events themselves (exceptions: productions of operas, some 20th-century scores offering the performer options). Commenting upon the events from the perspective of the individual point of view and prejudices of the performer as engaged participant in the "telling" of the story. May (over-) emphasize characterization of actants (protagonist and antagonist), or especially unusual (narrative) reorderings or disruptions of expected events or event-sequence (narrator).”* (n. p.)

Thus, the topic of agency is indissolubly related to the issue of representation. As music passes in time, *musical representations* are prone to be understood in terms of actions. Consequently, the relation between musical events and anthropomorphic representations appears logical. Claus Cluver (quoted by Pederson 1996) shows how action is related to representation. A typical musical referent mentioned in psychology is the sound source. Thus, when listening to a violin, one tends to imagine a violin. Cluver shows the paradox of how Schaeffer's *Etude aux chemins de fer,* composed from real sounds of trains, gives rise to fewer representations of trains than *Pacific 231,* Honegger's famous symphonic work. For Cluver, Honegger's piece presents *a complete action of a train,* whereas Schaeffer's does not *behave* as a train. The train is a referential mark that does not get to shape a narrative. These referential marks *become blurred, dissipated,* or *lose their representational power,* and get to be understood abstractly by the way in which the structure is shaped. Thus, paradoxically, certain apparently concrete components (as the sound of a train) become abstract. As a corollary, other apparently abstract components may *re-signify* themselves in the course of the piece acquiring a representational value that they perhaps did not present earlier (the Wagnerian *leitmotiv* might be an example of this). In this way, both art conventions and listening expectations play a crucial role in the relation between music and narrative (Pederson 1996).

Cluver understands musical narrative not only as structural characteristics but also as *significant human behaviour.* In this sense, this notion is related to Micznik's assertion that music cannot get rid of the "*common trait of most human cultures which amounts to a natural impulse to impose a certain kind of order upon the perception and representation of the world*" (Micznik 2001, p.193). This conception of narrative as a way of experiencing the world (Forsey 2003) is what we will discuss in the following section.

9.5 The psychological perspective

9.5.1 Time and narrative

The discussion on the definition of narrative seems unavoidably to be psychologically oriented. Determining *what is experienced as narrative* seems more important than defining *what narrative is.* For White (1981) there is a universal need to narrate and to give the events inhabiting our experience a narrative aspect. For many scholars, narrative is inherent in every human experience (Forsey 2003). For that reason narrative is not only a way of informing events in sequence through time, but also of conceiving the particular form in which events are organized in time. "*Time becomes human time in the extent in which it articulates itself in a narrative way, and the narrative reaches its total meaning when it becomes a condition of the temporal existence"* (Ricoeur 1985; p. 113).

This narrative impulse, fundamental and far-reaching, appears as a cultural function by which people *narrativize* discourses in general in granting the events of their lives a formal structure. This shows that narrative consists of linking events through a structure that imbues them with meaning, which those events as a mere sequence do not have. The plot is nothing more than a story's mechanism of abstraction as of a set of incidents (Ricouer 1985). It is important to emphasize the formal character of this definition of plot. It allows for every temporal organization that synthesises heterogeneous events to be understood as a plot. In this way, the formal functions of this structure, *closure function* for example, are defined as psychological functions because they are not the result of the intrinsic characteristics of the event but of a coherent organization imposed by the subject. They give discourse its narrative character. This probably happens, by definition, with the concept of the underlying voice leading and the idea of the prolongational structure (chapter 3). Thus, the plot is the structure of relations in which events *acquire meaning* as part of an integrated whole. The plot fills in the blanks between these events with causal connections and intentionalities, and provides the succession with continuity. Extending Alasdair MacIntyre's idea (quoted by Forsey 2003) that the unity of human life is the unity of a search for narrative, we can think that the unity of the musical work is only possible in the search for narrative.

For White (1981) the plot is something inherent in the organization of events that is not anchored to an external referential structure and is proper to the present succession of events. This plot arises from the way in which the subject assigns a hierarchy to the events according to their cultural meaning. By means of that hierarchy, the discourse gains continuity instead of appearing as a set of isolated events. Since the important thing is the way in which the events gain coherence in the sequence, the facts themselves are taken for granted, so that what is of interest are those facts and not their *agents*. The narrated world is "*a world in which things* happen to *people rather than in which people* do *things*" (p. 10) (original emphasis). Briefly, the narrative function emerges from the intentionality the subject assigns to an order of things with the idea of conferring a particular meaning to that order in which the events contribute to the sense of continuity that justifies their unity, bypassing the possible breaches between them.

Along these lines, Sloboda (1985) suggests that the mental substrate of music should be similar to what underlies certain types of stories. Music and story may both be characterized according to the evolution of states of tension and relaxation, stability and instability, etc. Paraphrasing Ricouer (1984, p.533), the problems of musical narrative are confined to the reconfiguration of time by musical events. As Chatman (1981) indicates "*narrative itself is a deep structure quite independent of its medium*" (p. 117). For that reason, it is not difficult to talk about narrative even though no semantic reference exists, when the medium is not words and there are no propositional representations. The essential restriction that determines a statement as narrative is temporal. According to this, the condition for speaking of narrative is the presence of a double temporal structure. But in addition, this double structure must generate some kind of tension.

> *"All narratives, in whatever medium, combine the time sequence of plot events, the time of the histoire ("story-time") with the time of the presentation of those events in the text, which we call "discourse-time". What is fundamental to narrative, regardless of medium, is that these two time orders are independent … This independence of discourse-time is precisely and only possible because of the subsumed story-time. Now of course all texts pass through time: it takes x number of hours to read an essay, a legal brief, or a sermon. But the internal structures of these non-narrative texts are not temporal but logical, so that their discourse-time is irrelevant, just as the viewing time of a painting is irrelevant. We may spend half an hour in front of a Titian, but the aesthetic effect is as if we were taking in the whole painting at a glance. In narrative, on the other hand, the dual time orders function independently. This is true in any medium: flashbacks are just as possible in ballet or mime or opera as they are in a film or novel. Thus in theory at least, any narrative can be actualized by any medium which can communicate the two time orders"* (Chatman 1981; p. 119).

Therefore, what is important is: (i) the presence of two time orders, (ii) the independence of those two orders, (iii) the relevance of both time orders in the experience, and (iv) the conflict established between both orders. It would seem that the narratological proposals in musicology cannot fulfil these four requirements. There is a point that musicology cannot recognize: in spite of the attempts, like Mizcnik's, to identify a double temporality in the relation between the quality of the musical themes and the way in which these are developed in time, it is doubtful that those two supposed temporal orders can (i) be independent, and (ii) establish a clear conflict between them. The proposal here is that the problem musicology faces in defining a narrative quality in music stems from its central activity as an academic discipline, musical analysis, presenting non-temporal, logical constraints. Following Chatman's ideas, for musicology, the time of its discourse is irrelevant. For that reason the musicological approaches nearer to the notion of narrative are not those that depend more on structural analytical tools (as those used when discussing plot and agency). Is it possible then to talk about a double temporality?

Raphael (2004) approaches musical narrativity by avoiding the topics of content and agency, instead referring to underlying forces that motivate the configuration of narrative structures. Narrativity emerges from an equidistant point between the musical structure and the listener's narrative construction. According to Raphael, the listener unfolds a reflective (metacognitive) activity as of the composition's structure. Such activity elicits, highlights, emphasizes the narrative quality that belongs to and lies in such musical structures. Thus, not every structure is able to give rise to a narrative activity. Narrative emerges from a structural substrate that presents discursive disruptions or destabilizations of the discursive order. In particular, the main discursive disruptions are those that alter the notion of *before* and *after* in the course of the composition. According to Raphael, narrative is a vehicle by which time, voices and plot structure are ordered and made to appear as a coherent whole. For that reason musical narrative is more frequent than is often recognized. The narrative idea glimpsed in his proposal is compatible with the notion of *Transposition* proposed in chapter 7: it is an instantiation of a story.

9.5.2 Narrative predisposition (structure and function)

Narrative is one of the most important activities of human life. As far as its psychological incumbency is concerned, narrative is interpreted in diverse ways. On the one hand people live surrounded by explicit narratives: films, novels, etc. that we visit because of the psychological need *of being in the company of a story*. Here, the story, in as much as it is *aesthetically communicable,* is considered an artistic object (Dissanayake 2001, 1992, Young and Saver 2001). Nevertheless, narrative activity settles in all human activities, and is integrated into life in such a way that life itself is seen as a narration (Forsey 2003), while at the same time the narration organizes some aspects of life (Turner 1996, Bruner 1991). In that way, narrative not only speaks of stories that have happened to us in the past, but also allows people to understand their lives as these develop.

Thus, narrative constitutes the *modus operandum* of many psychological functions. For example, for Young and Saver (2001), narrative organizes memories. In this case narrative is seen as a cognitive resource that allows designing the processing of events so they may be retrieved later on. Narrative organizes episodic memory, which Young and Saver denominate *autobiographical memory*. This memory is related to temporal phenomena and therefore is the opposite of the memory of images and concepts, which the authors name *generic memory* (whose contents are not related to time). We can speculate that generic memory is related to the enculturation of non-temporal musical structures (tonal hierarchy for example, Krumhansl 1990). On the contrary, autobiographical memory would be crucial for recognition of musical structures in a discursive sense (recognizing a theme, a melody, etc.).

Thus, narrative is thought of as a human activity of high adaptive potential. Consciousness requires a narrative structure to create a sense of self based on the characteristics of telling stories (characteristic of coherence, sequence and attainment). This perspective has two important implications for our discussion. Firstly it has everything to do with what Malloch (1999/2000) defines as narrative in communicative musicality – a way of organizing the experience of the self in the course of time (chapter 8, p. 267). Secondly, the narrative experience of time allows assigning to the experienced time the attributes of coherence, sequence and attainment (Young and Saver 2001).

Narrative organizes from early childhood the abstract sense of tension and relaxation, through its *timing* (Trevarthen 2004). At the same time, it is known that music orders the temporal experience. Both storytelling and music communicate time. Both activities are based on the possibility of the human brain perceiving and producing organized durational patterns, from which a substantial part of their meaning emerges. According to Thaut (2005) *"music, especially rhythm, can serve as a model of temporality in the human brain (…) Music must be viewed as a biological fact, not just as a cultural phenomenon"* (p. 184).

In addition, Dissanayake (2001) associates the activity of *storytelling* with music as far as both of them are based on the *communicative musicality*. But, at the same time she emphasizes the dovetailing of music and narrative with a particular type of aesthetic imagination. For her, aesthetic enjoyment (both in reception and production) arises from the imaginative activity elicited from the organized time experience. On their part, Tooby and Cosmides (2001) assert that there is considerable psychological predisposition in the human being for the creation and narration of fiction. This predisposition is based on the possibility of understanding fiction to be so (as opposed to "reality") through the intrinsic contextualization of the statements that compose it. In other words, what allows us to understand fiction as such and therefore achieve a state of aesthetic enjoyment from a set of proposals gathered in a narrative, is the fact that they *"refer internally to each other rather than to the world",* so that *"the entire (set of prepositions) is cognitively walled off…"* (Tooby and Cosmides 2001, p. 13). The temporal organization arising from the intrinsic disposition of the statements would be the platform on which fictional imagination unfolds. In this way, the intrinsic organization (or the way in which some propositions refer to others within the same set) would be more important that the extrinsic reference in the formation of aesthetic meaning. For that reason it is possible to understand that narrative arose before language in ontogeny (Donald mentioned by Trevarthen 2004). Without words, storytelling is made up of rhythms, sounds, movements and gestures.

All this leads us to adjust the scope of the word *narrative* in the context of this discussion. Having taken a term clearly related to linguistics (and language in general) the intention is to present it here unrelated to its allegiance with language, as a *mode of thought*.

9.5.3 Time, performance and the subject in the musical experience

If narrative as a mode of thought makes sense due to its temporal nature, it is not surprising that a musicology identifying music as text and based on the analysis of musical texts as a methodological resource should reject the topic. As a result of this, the discussion on the *narrativity of music* faces two important obstacles. The first is to maintain the discussion on different conceptions of narrative. Authors averse to speaking of the narrativity of music have a semiological perspective on the topic and based their rejection of this approach on the apparent lack of significant musical language resources (Abatte 1991, Nattiez 1990, also see Mizcnik 2001, p.244 footnote). From the perspective adopted here, this is not a problem of narrative but of language. Arguing that "narrative is a way of expressing knowledge of the world" implies that whatever constitutes an exhibition of knowledge sequenced in time may be understood as narrative. Music performance is just that.

The second pitfall refers to issues of musical ontology (fundamentally on the trichotomy of music as text, music as performance, music as social construction). Scholars who understand music as text reject the narrative hypothesis because music, in lacking a metalanguage, cannot explain the split between story and discourse. For example, as a consequence of the philological and non-performative perspective on music, White (1981) suggests that in music, story and discourse may possibly be collapsed in the structural organization. On the contrary, this thesis's proposal is that the story-discourse split appears in music as soon as it is thought of as performance. Thus, the story-discourse dichotomy derives from the composition-performance partition. This is not a metaphorical bond, but rather is based on the idea of performance as transposition: "*an important consequence of this property* (the two time orders, is) *the translatability of the narrative from one medium to another*" (Chatman 1981, p.118). Thus, music performance, as a transposition of the musical composition, conserves the time of the story and contributes its discourse with its own temporality.

As Ricoeur remarked (1985, p.93), the story's time is in no way equivalent to the time of events in the real world; in the story an event may take much less time than it would in reality, just as something can appear in a more prolonged amount of time, when internal compositional reasons demand more time for an event. Music performance can offer musical experience either a longer or shorter time according to the "internal compositional reasons". Thus, the time of the performance is in no way equivalent to "the time of the events in the world" (the time of the composition, of the *abstract* musical structure as exposed in the composition). It is possible to understand music performance as paralleling what Ricouer calls the time of the plot construction (mimesis II). Music performance takes on a mediating role between the pre-existing temporal configuration (that of the *composition*) and the "*re-figuration of the temporal experience by this constructed time*" (the re-figuration of the listener's experience of time). "*We thus follow the passage from a pre-figured time to a re-figured time mediated by a configured one*" (Ricouer 1985, p. 115). That configured time is the performance time, it is the real here and now time.

Narrative does not deny a chronology, but reconfigures real time in a way that is shared and perceived by the reader. This reconfigured time imposes on the reader new expectations and new temporal logics. In other words, narrative proposes new temporal logics that the reader is always willing to interpret. It will be suggested here that expressive music performance (performance of academic instrumental tonal music in particular) which makes use of resources such as rubato, among others, gains its narrativity when breaking the constraints of the preformed time (given by the metrical corset of the underlying pulse) and introduces its own discourse time, which uses other mechanisms for the understanding of the passing of time.

According to Ricouer (1984), the tensions between the story's time (narrated time) and the discourse's time (the narration time) are the result of temporal arrangements and disarrangements, synchronies and asynchronies between both time orders that project a fictional experience of time. In the sphere of expressive musical performance, it is easy to find those tensions. For example a performer is ready to play a composition with a certain rhythmical pattern. In other terms, he or she is ready to *narrate* a certain temporal structure. For this, he or she uses a particular narration time: the time that as a performer he or she *alters* by using rubato. This fact produces conjunction-disjunction, synchrony-asynchrony tensions between both times that triggers a fictional experience of time, an *imaginary* time. By no means is this Ricouer's exact idea. What is trying to be rescued here is his notion of this temporal split generating an experience of fictional time. Pre-figured time is the time of events in the world. It is the time of musical structures gained by enculturation, which in western music are governed by the metrical structure and proportional rhythmic patterns (Lerdahl and Jackendoff 1983, Cooper and Meyer 1960). But the real time is that of performance, in which durational relations are much more complex, and in which strong and weak are not the abstract terms of a dichotomy but the extremes of a dynamic continuum.

Accordingly, narrative emerges in performance. Speaking about narrative will make sense if music is understood as performance. This is possible if a series of reasons are examined.

Firstly it is not possible to think of music as an object in the world, unconnected from the consequences it produces on the subject. A clear example of considering music as an object unconnected from all subjects is Mizcnik's (2001) warning about the disadvantages of *anthropomorphizing* thematic processes. In contrast, when considering music as a phenomenon that emerges from experience, such inconvenience does not exist because the musical experience is related to every temporal experience in life, narratively constructed on the basis of metaphors with an "*affective quality that describes agents going places and doing things with energy and style, conscious of how their bodies move and how experience is made by moving*" (Trevarthen 2004, p. 20). In addition, abundant psychological evidence exists that makes the idea of considering thematic processes in music in anthropomorphic terms reasonable (Watt and Ash 1998, Sloboda 1998).

Furthermore, if while speaking about music people refer to the *musical experience* (of playing, composing, listening, etc.) then music is no longer *out there*, music is what *happens* to the subject that experiences it. Thus, experiencing a musical piece as narrative would not be substantially different from experiencing a novel as narrative (see Imberty 1997a in which the author evokes a passage from *A la recherche…* where Proust explains how narrative is an attribute of experience rather than a trait of the object). This is closely related to the idea of a *narrational mode of knowing* music, by which it is possible to capture attributes of the musical experience that other modes of knowing (for example analytical-logical knowledge) do not achieve in shaping (Micznik 2001). Along these lines, Small (1999) argues that symphonic music is a narrative form equivalent to the novel. From this perspective, contrary to what the dominant musicology affirms, listening to a symphony does not imply recognizing abstract formal structures, but identifying instead with a dramatic sequence of events, characters and their intentions. "*Structure or form are concepts imposed later, by critics and scholars, as when they speak of the structure or the forms of a novel. Neither the average reader of a novel nor the average listener of a symphonic work must worry about such things.*" (Small 1999, n. p.)

Secondly, music performance not only has an expressive function (Bhüler 1933, Ducrot 1972) in the sense of referring to a psychological and emotional attitude, but also shows a metalinguistic function (Ducrot 1972; Cobley 2001) because performance may be understood as an action that implies, in an open or concealed way, a reference to its own code. Performance alludes to composition, and to the code of composition. This is manifested precisely in the restrictions the composition as material imposes on the performance. Those constraints are precisely the points at which the performance alludes to its own material. In other terms, the performance *works* as a metalanguage. Performance *speaks* of composition. Mark Tanner argues that "*the listener's understanding is shaped by* *the narrativity of the performance*" (2000, p. 196). Thus, performance not only captures the temporal attributes of the narrativity but also its metalinguistic attributes. When narrating, a reflective judgment is made on what is being narrated (Ricouer 1984). To narrate is to reflect on the narrated facts. In that sense the way in which the performer reflects on the composition (Cone 1995) is part of their narrative task.

Thirdly, the previous section referred to how certain *musical* behaviours lend credence to the psychogenetic conditions of narrative; and this section defended the view that when understanding music as performance, the time of the story (that of the composition) and that of the discourse (of the performance) emerge as different from one another. For that reason, it is sensible to suppose that in cases where music is identified with practices in which composition and performance are not different activities, this split does not take place. In other terms, the intention is to outline a cultural limitation upon the notion of musical narrative within the scope of *common practice* music (of interest since prolongational theories allude to it), "*because not all human ways of making music are dynamic in this way, and very few musical cultures advocate that concept of change and development by opposition, struggle and victory that characterizes the musical works of the western symphonic tradition.*" (Small 1999, n. p.)

Finally it is necessary to consider the performer's experience, and the role that narrative may play in that experience. As regards this, David Carr's assertion that "*narrative activity… is a constitutive part of action, and not just an embellishment, commentary or other incidental accompaniment*" (quoted by Forsey 2003, p.177) draws attention to the importance of narrative in the organization of performance. In other words, just as some psychologists and neuroscientists speculate about the role of narrative in memory, it is also possible to advance by considering the role of narrative in action and performance planning. In the same line, Levy (2001), from a musicological perspective, proposes a similar valuation of narrative in performance. She considers that narrative may be thought of as psychological and conceptual *scaffolding* for the accomplishment of the piece. But that *scaffolding* is not just a tool that leaves no trace of its existence in the finished work. On the contrary, this *scaffolding*, by virtue of the idea of transposition, becomes part and parcel of the final work and therefore of the communication between performer and listener, organizing the dynamic meaning that is put into play in such communication. In this idea, communication between performers and listeners is strongly related to communication in early childhood, its content is not propositional, although it is narrational in its temporal organization. And its path is fundamentally crossmodal. The next chapter will show the results of an experiment that illustrates the crossmodal nature of communication in performance, reinforcing the hypothesis that its content consists of a particular way of organizing time, described, after Ricouer (1985), as *the configuration of time in performance.*

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Summary. Musical narrativity has been a controversial subject in the musicological debate during the last two decades. If the possibility of understanding music as narrative is examined from a literary perspective, the intellectual attempt faces the problem of *meaning in music* and *musical content*. From this perspective, music can no more than *pretend* to be narrative. Some structuralist approaches, looking for some narrative elements (plot and agency) in the musical form as it takes shape, the motivic elaboration and psychological ways to adhere to or distrust the a priori structures, do not manage to answer the previously formulated semantic objection. Nevertheless, musical narrativity is possible if it is approached from an anthropological and psychological perspective, as a human behavioural propensity more than as an aesthetic product. This is the line that was followed throughout this chapter, after examining the problems that emerge from the first alternative. Pondering narrative as a way of knowing the world allows including music in that modality of knowledge. From this view, the narrative function is emancipated from the expressive medium (words, images, etc.) and is subordinated to the establishment of a double temporality: (i) the *story's time* and (ii) the *discourse's time*. If both of these time structures are independent, tensions between them will give way to the narrative function. We hypothesize that these tensions are captured thanks to the mechanisms of interactive behavioural timing since they are involved in performance understood as intersubjective experience.

From this perspective, story-time is the time of the musical structure, and discourse-time – the time of the medium of the narrative – is the time of the performance. Most of the hostilities that this idea received from musicology are related to the fact that traditional musicology is based mainly on the analysis of the musical text (score). In this sense, music may be understood as narrative only if considered as performance.

Chapter 10: Creating performance *from* prolongation

We have proposed a *dialectical* relationship between structure and performance as an alternative to the *enactive* (romantic) and *determinist* (objectivist) relationships. Accordingly, this chapter proposes the performer uses, together with the *composition,* a varied set of materials in order to construct his or her work as a *transposition*. The performance's verisimilitude (as the means of valuing a performative art) will depend on how the performer uses these materials as emerging from a dialectic between the impositions of that material and the will of the creative act. In the first part of this chapter, aspects of a composition that can be taken as structural materials of a performative creation are analysed. In the second part, a set of 5 performances of that composition is examined to analyse how those structural materials are used in the transposition. These uses are discussed in comparison with another transposition to a filmic support. In particular, the time configurations of all transpositions are compared (particularly concerning the prolongational structure of the composition). After this, the incidence of such a time configuration on the listener's experience is investigated. The aim is to find out whether the listener is able to experience the musical (prolongational) structure according to the way in which the performer has made use of it. For this, a listening experiment is presented that investigates the experienced analogies between the performances in the set, and the performance in the film. Finally, these analogies are discussed in the light both of the notion of crossmodality as related to the concept of intersubjectivity as a communicational paradigm (chapter 8), and the idea of musical narrativity (chapter 9).

10.1 One of the materials: the composition

The composition chosen was the Chopin Piano Ballade in G minor op. 23 (1835). The ballad is a genre of popular origin that unfolds an epic meaning. By the 15th century, the genre had lost its dance character and adopted a clear narrative style (Björling 2002) based on a series of repetitions of a *refrain.*

Chopin's Ballades are relatively extensive works and are considered to be within his most *serious* repertoire. They were to be based on an interpretation by Chopin of Lithuanian legends, gathered by the Polish poet Adam Mickiewicz, as an allegory of his contemporary political context. Nevertheless, the ballad, as a folkloric genre, is not associated to the Polish nationality, so the *Polish spirit* is thereby supplied by the Chopinian style itself.

10.1.1 Some structural surface aspects

Chopin's Ballades are considered as an experimental genre in which attributes of relatively free styles (i.e. character pieces, *Charakterstücke*) are combined with more structured compositions (the waltz for example). For reasons of space, only the first bars are analysed here. However, it is worth indicating that the tension between thematic elements represents one more reason for displaying opposition as a deliberate search for ambiguity.

Figure 10.1 exhibits the first 40 bars (example 27 in disc). Although it begins in binary metre, the ternary metre, used by Chopin in all the ballades, appears just after the introduction. Although the ternary metre is not associated with the ballade as a genre, with such a metre Chopin can reference and combine different folkloric and popular elements (the pastoral rhythm, some stylised dances such as slow waltz, brilliant waltz, etc.) in order to contribute to his Polish-rooted identity (Björling 2002). In this way, the binary metre beginning and such a slow tempo clearly indicate the fragment to be introductory, since audiences at the composer's time knew that the Ballade's beginning was always marked by the appearance of the refrain (Samson 1992).

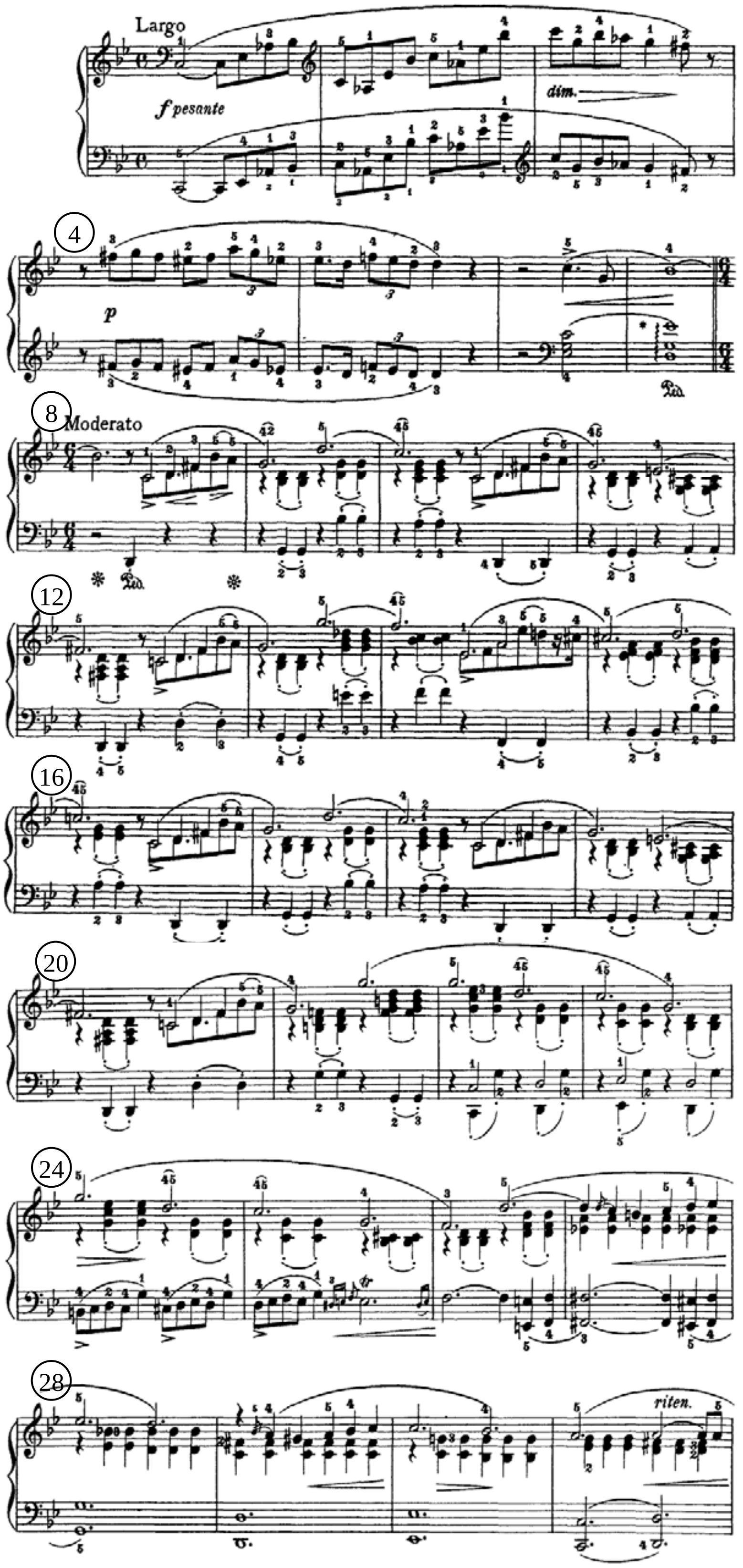
Largo
f pesante
dim.
4
p
8
Moderato
12
16
20
24
28
riten.

Figure 10.1. *Chopin's Ballade in G Minor Op. 23. (b. 1-31)*

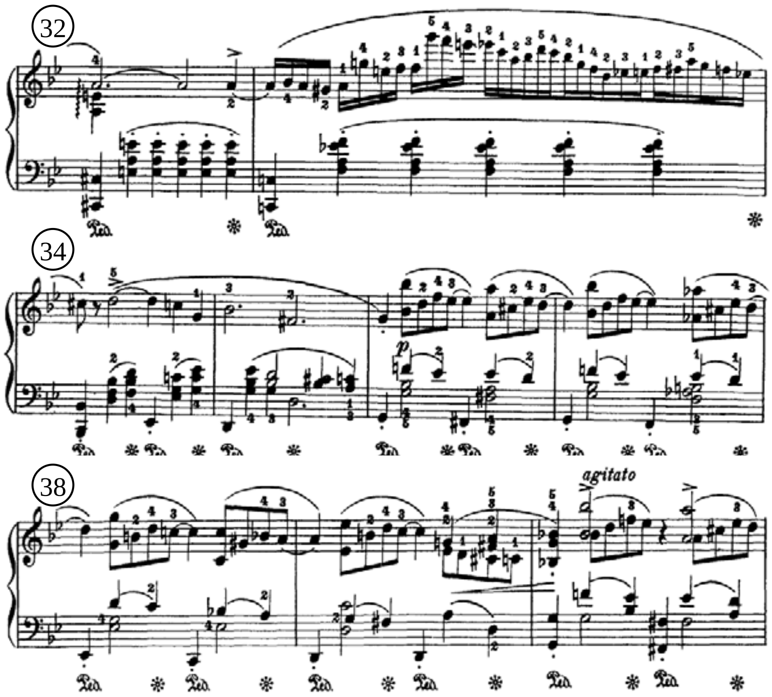

Figure 10.1.(cont) *Chopin's Ballade in G Minor Op. 23. (b. 32-40)*

As an introduction, the extremely simple texture of the first bars introduces a clear heraldic element, declared explicitly in the initial C, like a *call*. This element appears in the second ballad but is reduced to the first few notes (Figure 10.2).

This *recitative-like* introduction denotes the influence of Italian opera – Bellini's work in particular – on Chopin's style (Rothstein 1995, Klein 2004). Therefore, in spite of its apparently rigid rhythmical-metrical writing, it is likely that the entire Largo is more of a *free* performance. This Largo is clearly divided into three segments, indicated by two important pauses and changes in melodic behaviour and tonal harmonic function, with implications for textural treatment. Despite such metrical and textural clarity, this

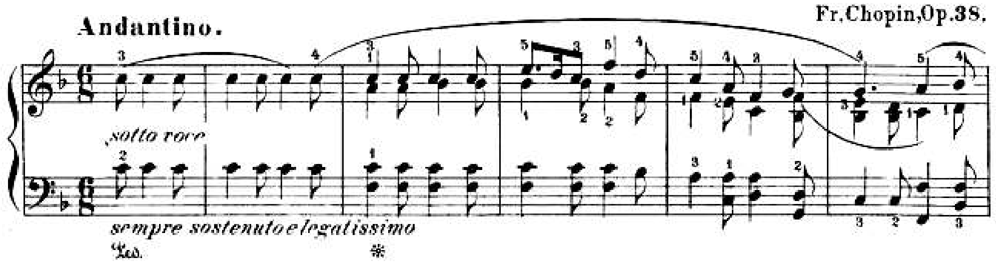

Figure 10.2. *Chopin's Second Ballade op 38*

beginning inaugurates ambiguity as a narrative topic that will characterize the entire composition. The beginning starts by unfolding an A flat major arpeggio, determining the main key until the bar 3 f sharp contradicts it. Remarkably, Chopin accompanies this note with a *diminuendo* mark. This tension (between a flat and f sharp) is maintained across the rest that connects bars 3 and 4. In the following segment, a series of embellishment notes emphasizes the first f sharp and soon the d, reinforcing the D major chord – an emphasis that derives in the bar 5 d along with a definitive arrival to G's dominant (the real tonic of the composition)[1]. The arrival at the d indicates the beginning of another much more extensive pause between bars 5 and 6. After this, a remarkable texture change introduces the perfect cadence while maintaining an ambiguous atmosphere until well into the Moderato. This ambiguity is carried out by the incorporation of the e flat as the 9th of a cadential tonic six-four chord (bar 8). Notice how Chopin extends this cadence for 4 bars and uses it to harmonically unify the Largo's end and Moderato's beginning (where the theme of the Ballade's refrain is introduced). Prominently, that 9th chord is extended throughout 7 half notes (the longest duration up that moment).

The Moderato (Figure 10.3) presents the *refrain* – typical of the genre – suggesting an initial segmentation criterion. Firstly the ternary rhythm (a waltz rhythm for many scholars – Björling 2002, Klein 2004) and fundamentally the advent of the *refrain*, with its successive repetition-elaborations, account for the poetic composition. Each refrain lasts 12 quarter notes (four dotted half notes) and the refrains in turn form quatrains (four refrains form a well structured stanza). An intermediate grouping level comprised of two refrains each can also be identified, consistent as well with the typical grouping structure of the poetic text in such folkloric compositions. Each refrain displays two motifs: the *x* motif

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[1] Since the f-natural of bar 5 is functioning as a neighbour note of e-flat (which, in turn, is a neighbour note of d), belonging to a more superficial level, this note does not modify the harmony content of the passage.

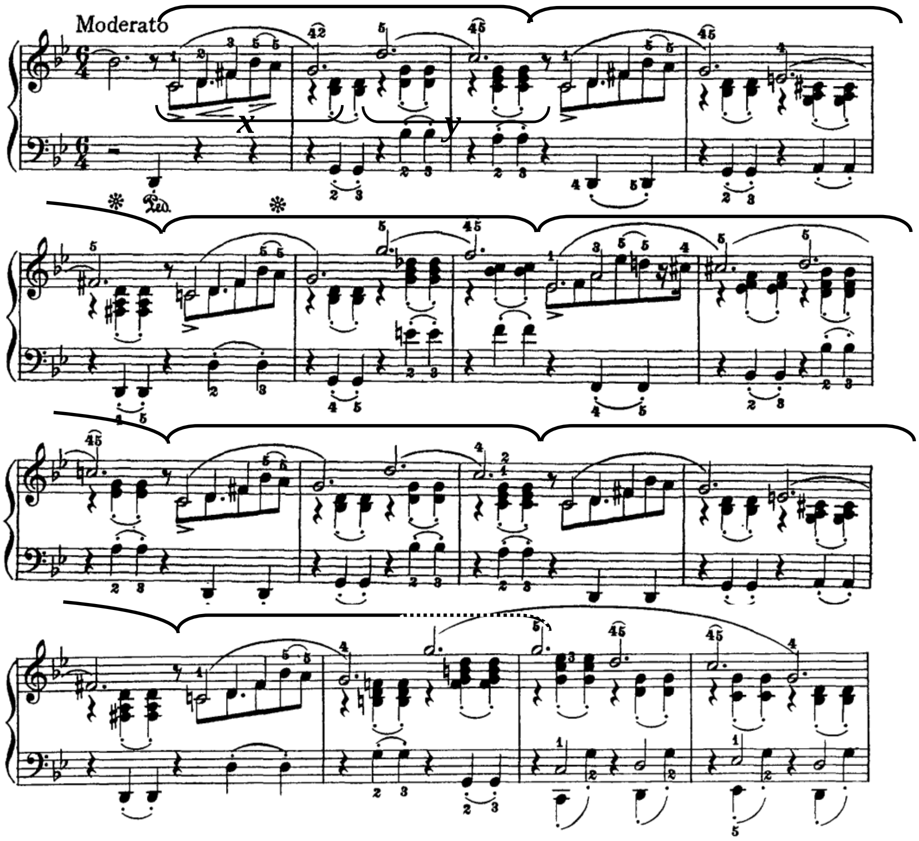

Figure 10.3. *Refrain organization of the beginning of Chopin's Ballade in G minor op. 23.*

constitutes an *accented rest (acephalous, headless)* emphasizing the fall to the tonic by unfolding the dominant emphasized by embellishments of its root note (c, d's neighbour note) and its fifth (b flat, a's neighbour note) and presents, with the quavers, an important rhythmical impulse. In opposition, the *y* motif is dynamically less rhythmical and melodic, consisting of two long notes moving by steps. This motif appears much more "varied" than *x* throughout this entire exposition. The *x* motif finalizes in (and therefore dynamically emphasizes) the tonic. The *y* motif, on the contrary, emphasizes generally located moments of tension, usually placed on the V or the ii, alternatively contributing to indicate, with the use of the V, the before mentioned intermediate grouping level.

The imitation of the poetic structure composed by the literary ballad's verses and stanzas is a way of keeping the substrate on which a story unfolds (that told by the ballad) in the minds of listeners – thereby introducing the composition's narrative impulse into the formal structure itself (Björling 2002). In a strophic composition, it is possible to hope for a clear tension-relaxation pattern at the ends of successive refrains in such a way that each stanza finalises a tension cycle at a clear relaxation point. However, in very simple poetic compositions, smaller and simpler tension-relaxation patterns can be expected, resolving at every verse. On the contrary, this ballade cancels the expectations again as each refrain inverts the pattern, displaying the first motif (*x*) resolving at a relaxation point while the second (*y*) generates tension. In this way, such tension-relaxation patterns contradict the formal logic of the stanza's organization, crucial for generating ambiguity. Such deep and structural ambiguity undermines the initial segmentation criteria, based on the form given by the harmonic content. As will be seen (p. 320), these last criteria are more compatible with that emerging from the analysis of the underlying voice leading. Interestingly, this type of opposition is very typical in epic folk songs as a resource for maintaining attention throughout an extended composition. Therefore, by using this resource Chopin is accentuating the composition's popular character. The ambiguous articulation blurs the stanza's boundaries. With the intention of approaching that ambiguity's meaning, figure

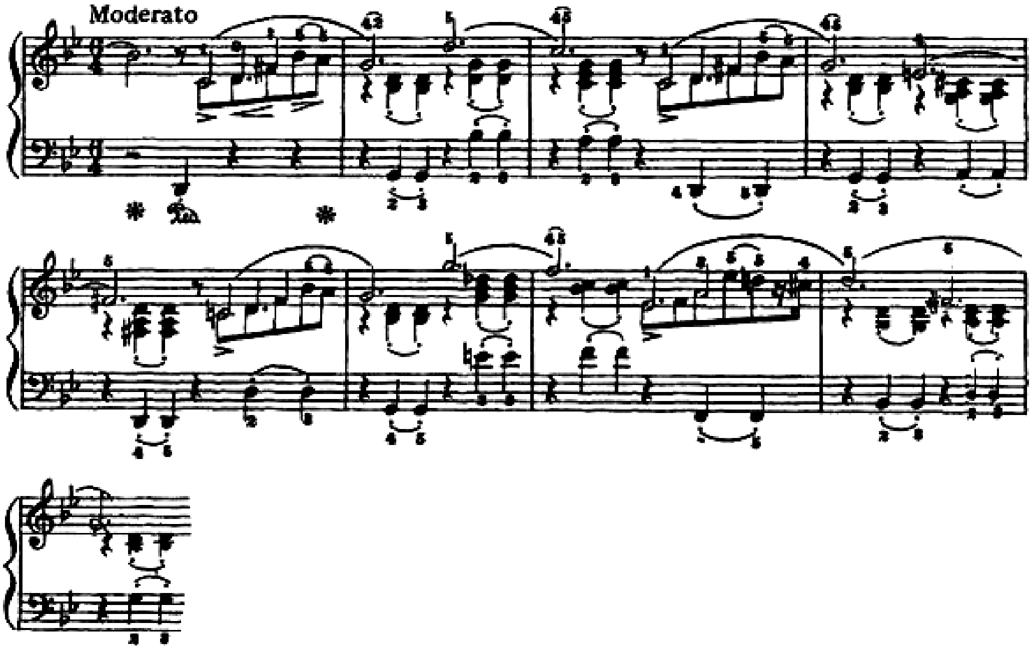

Figure 10.4. *Hypothetic resolution of the Ballade's first stanza.*

10.4 shows a hypothetical, unambiguous resolution of the first stanza, on the tonic, clearly marking the meeting point between the highest hierarchical grouping and the moment of most harmonic relaxation. Contrarily, as the original composition stands, the gravitation towards this point is *softened*, avoiding the hierarchic importance of articulating the stanza's fourth verse.

As the work progresses the formal clarity is blurred: the absence of words forces Chopin quickly to suspend any complete repetition of the stanza (Björling 2002). Thus, the second stanza is incomplete (Figure 10.3) and the structural ambiguity operates in a much subtler way. Suddenly, several simultaneous segmentation criteria may be established. Thus segmentation becomes progressively more doubtful. From then on, melodic reiteration (literal or sequenced) is handled as a resource that instead of organizing the discourse according to a strophic archetype will create ambiguity in a beautifully elaborate way. The contradiction between content and (melodic-harmonic) form follows its course from bar 21, giving rise to new *elisions*. Nevertheless, from that point on the segmentation is more elusive still. This appears clearly manifested in the phrasing slurs displayed from bar 21. Figure 10.5.a shows the slurs in the score. It is very difficult to find a logical foundation for them. According to the discourse organization up to this point the segmentation of this fragment should be 4+4+2 (dotted half notes, figure 10.5.b) based on two facts: (i) the linking of four anacrustic dotted half note refrains, and (ii) the trill closing the phase at the semi-cadence, at bars 25-26. On the other hand, the treatment of the texture contradicts this perspective, telling us to segment into two units, 5+5 (figure 10.5.c). Likewise, repetition of the harmonic-melodic content presents these two halves as a kind of partial overlapping (figure 10.5.d). Thus, it could be understood as a *1+4+4+1* pattern, where *4* represents the sub-pattern that is exactly reiterated (metrically coinciding) In this way, the 5+5 segmentation presents a group of 4 common notes that, although maintaining their metric position, change position in the unit's serial order. This causes certain notes to be understood as the end of a unit and beginning of the next, contributing to the atmosphere of great ambiguity that, as was said, is evidenced by the placing of very uncertain slurs.

The following phrase, from bar 26, presents the same structure and the same

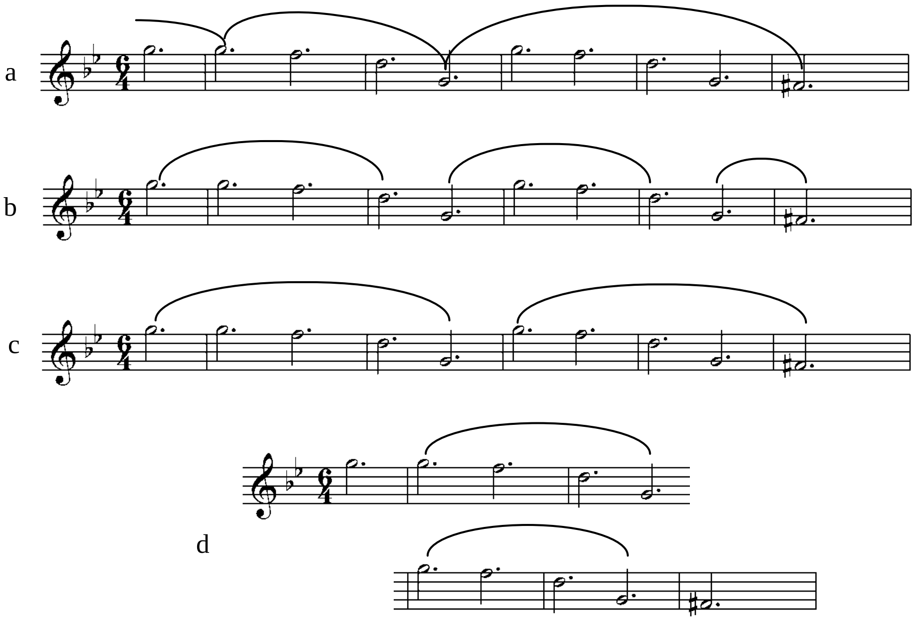

Figure 10.5. *Motivic relations and phrasing conflicts at the Ballade's b. 21-26.*

ambiguity – but this time reiteration appears as a *sequence*, a third below (Figure 10.6). It could initially be understood as 4+4+2^{++} (the last bar is *virtually* lengthened since the a^4 is reiterated to *prepare* the *cadenza* passage at bar 33 – Figure 10.6.a). But soon a 5+5^{++} (figure 10.6.b) or 1+4+4+1^{++} pattern (figure 10.6.c) emerges.

Although the rhythmical configuration in this unit supports the last option to clear the ambiguity, since this time the last note is lengthened, the uncertainty is reinforced.

The reiteration of the a^4 represents the beginning of the preparation for the final cadence at bar 36. It impels the thematic dissolution that takes place at the bar 33 *cadenza*. Consequently, all the segmentation criteria meet at the *gravitational* point upon reaching

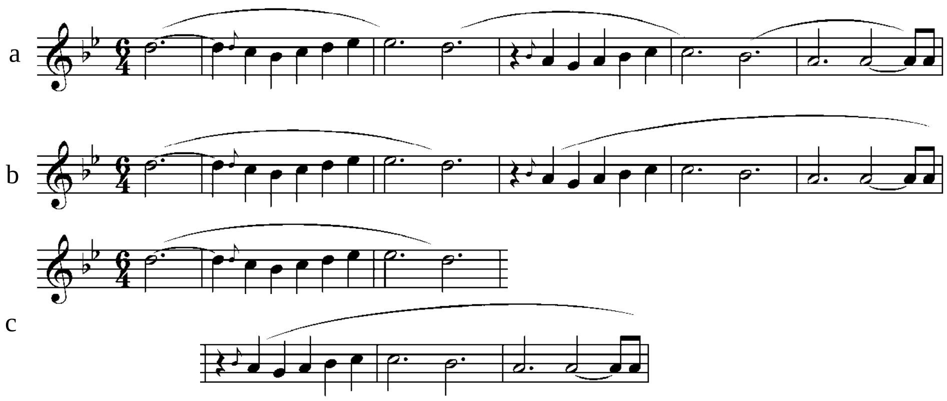

Figure 10.6. *Motivic relations and phrasing conflicts at the Ballade's b. 26-33.*

the tonic at bar 36, the first clear formal articulation. To summarise, since the stanza is abandoned until the perfect cadence at bar 36, formal ambiguity is continuing: everything seems to conclude, when in fact something is beginning, and vice versa. Clearly this dislocation of relationships is *re-located* at the bar 36 cadence. After the *cadenza* at bars 34-35, the perfect cadence, metrically and tonally classical, analogous to the cadence that finalizes the introduction, definitively closes the section with the first clear tonic in G minor. Bar 36, inaugurates a new motif, indeed derived from an elaboration of the *x* motif (figure 10.7)

Briefly, this structural perspective of the Ballade in G minor offers: (i) an introduction segmented into three units; (ii) a complete stanza with four refrains contradicting the surface harmonic content, (iii) another incomplete stanza; and (iv) a segment in which formal ambiguity is much more imperative until (v) a *cadenza* dissolves the thematic content preparing (vi) the end of the section where all the ambiguities are solved with a perfect cadence at bar 36; (vii) after which, a new motif inaugurates the next section.

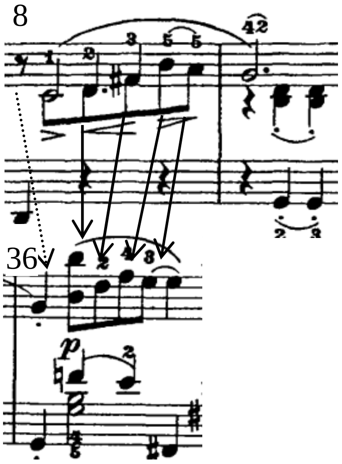

Figure 10.7. *Relation between the* x *motif and the bar 36 motif. (Notice bar 36's first note coming from the previous phrase.)*

10.1.2 Some prolongational aspects

The prolongational structure can shed new light on some of the conditions of ambiguity presented. Figure 10.8 shows the underlying voice leading analysis suggested by Rothstein (1995). As shown in the graph, the initial A flat major arpeggio operates as an unfolded chromatic neighbour note of the tonic G. The movement from this A flat major harmony to the tonic G, on which the melody finds its first structural note (*Kopftone*) at bar 9, takes place through a linear progression displayed by the upper voice (that Rothstein parenthetically indicates due to its auxiliary structural status), tying the d^5 with the g^4. This linear progression *thematically* anticipates two important aspects of the Ballade: both d, as the first structural note, and e as its neighbour note will operate thematically throughout the entire Ballade. This anticipation of thematic material in the underlying voice leading crosses the introduction and penetrates the moderato, *overlapping* with the Ballade's refrain. In this way, this linear progression not only unifies the transition from the Largo to the Moderato, but also reunites the three surface units, which compose the introduction, bridging the abovementioned expanded pauses. Thus, the underlying voice leading formally and tonally unifies a fragment that appeared disjointed and ambiguous at the musical surface level.

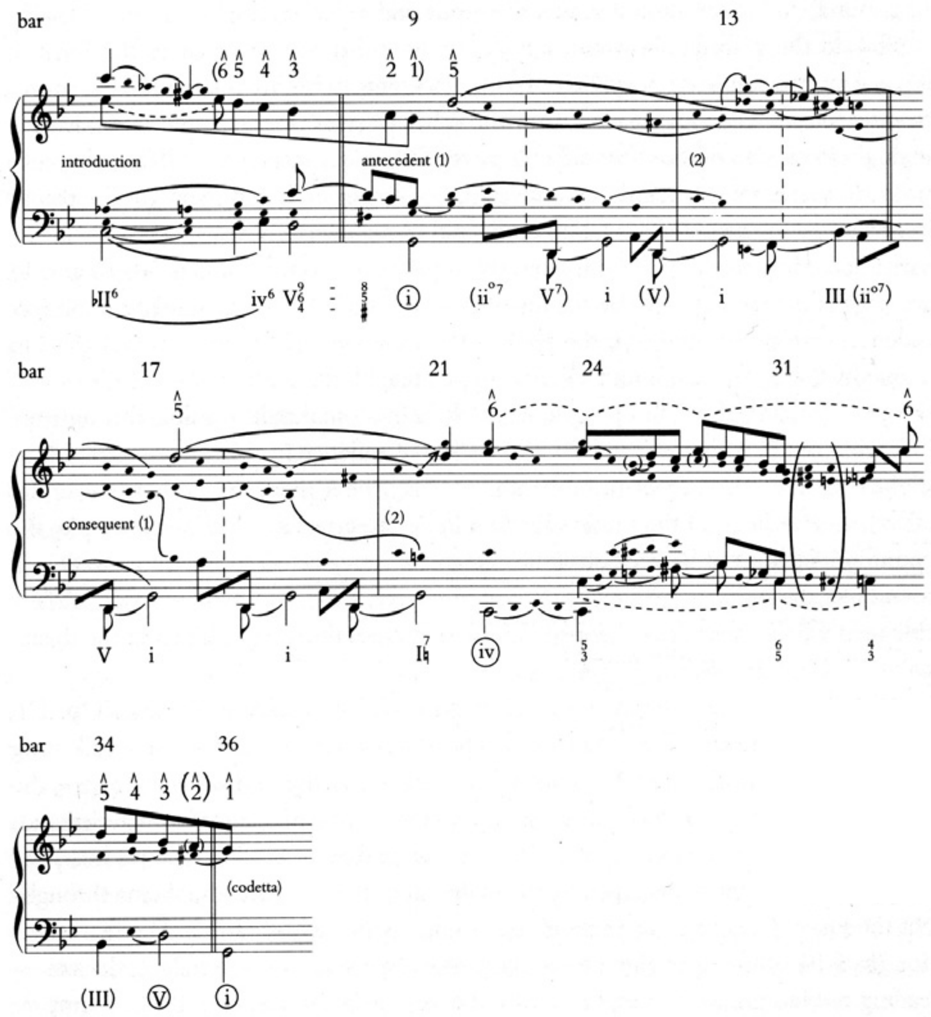
bar
9
13
(6̂ 5̂ 4̂ 3̂
2̂ 1̂)
5̂
introduction
antecedent (1)
(2)
♭II6
iv6
V 9 6 4
i
(ii°7
V7)
i
(V)
i
III (ii°7)
bar
17
21
24
31
5̂
6̂
6̂
consequent (1)
(2)
V
i
i
I♮7
iv
5 3
6 5
4 3
bar
34
36
5̂ 4̂ 3̂ (2̂) 1̂
(codetta)
(III)
V
i

Figure 10.8. *Voice leading graphic analysis of Chopin's Ballade in G minor op 23* (Rothstein 1995, p. 231)

Figure 10.8 shows, with the use of bars, the organization of refrains and stanzas overlapping with the linear progressions, from the fifth to the tonic on the harmonic i_6- ii-V-i progression. These linear progressions are developed on different structural levels, the unfolding of bar 34-36 being the fragment's deepest progression. The double bars indicate the stanza level, the dotted bars, the verse (refrain) level, and the simple bars, the two-verse level (an intermediate hierarchical level in the structural organization of the poetic form). In this way, the graph clearly shows how the strophic organization is abandoned as of bar

21 (as discussed above). In addition, the graph also shows how the linear progressions could be organizing the segmentation on a deeper level.

When considering the course of the linear progressions as a new segmentation criterion, a new dovetailing of different criteria arises, but now, involving underlying levels. Thus, certain units that are parallel at the surface level, at the level of the underlying voice leading represent different structural levels. For example, the third reappearance of the *x* motif at bar 12, comparable to the previous appearances at bars 8 and 10 respectively, is now a *suffix* prolongation of the g^4 (bar 11) and by definition constitutes a display nearer to the foreground than that of bar 10. Likewise the *y* motif whose first appearance at bars 9-10 installs the linear progression *Kopftone* at the highest hierarchical level, in its second appearance (bars 10-11) is the manifestation of a much more superficial hierarchic level – notice that the e^4 does not even appear in the graphic analysis. Its third appearance, in the g^5- f^5 (bars 13-14) is a *prefix* prolongation of the d^5 (bar 15). From the underlying voice leading perspective, this is a very interesting point since that register transfer (g^4- g^5) gives meaning to those prolongations, emphasising (filling the gap and favouring mental retention [see chapter 3, p. 63]) the structural relation between the d^5 at bar 9 and 15. In other words, that octave jump separates what could be understood as the prolongation of the g^4 as the final note of the first linear progression, from what may be thought of as the prolongation of the d^5 – the first note of the linear progression immediately following it.

Finally, the underlying voice leading graphic analysis reveals that the most ambiguous section at the surface level, from bar 21, can unitarily be understood, at deeper levels, as an extensive prolongation of the e^5 – d's neighbour note. Therefore, the analysis of the underlying voice leading does not contribute to solve the segmentation problems found at the surface level.

Summarising, until bar 21, the surface organization presents contradictory segmentation criteria (according to the strophic form and harmonic content) at the same time as the voice leading organization offers criteria that reinforce the harmonic content aspects but unify the units in more comprehensive segments (which cross the introduction and unify the successive refrains into stanzas). From bar 21, the segmentation is much more elusive, both at the surface as well as deeper levels, and all ambiguities, on every level, are only resolved at bars 33-36, in the final cadence. This is the clearest formal articulation to the moment, where elements belonging to surface and deeper levels come together.

10.1.3 Narrative aspects

Thinking of the ballade as a narrative genre is almost tautological. The ballade as a genre fits the narrative impulse of the romantic generation. In addition, one could conceive of this Ballade's particular organization, which may be understood as a *plot archetype* (Newcomb's term), as being at the service of narrative and dramatic aims. Nevertheless, the literary ballade centres the action on an only episode, depending considerably on the verbal element. This is the main problem with the idea of an *instrumental ballade* (Björling 2002). The ballade had a resurgence during the first half of the 19th century, impelled by the exaltation of nationalistic feelings. Thus, simply by saying *ballade* a particular meaning emerges on the part of the listener familiar with this context.

In spite of this, several authors, such as Tarasti (1994), have proposed approaching the First Ballade from a narrative perspective. Klein (2004) proposed a narrative view of this piece with some points in common with Tarasti. Klein considers that the introduction is heard as "*the announcement of a profound and painful tragedy* (while the reminiscence of the Phrygian cadence at bars 6-7) *tells us that the story is an old one, as if one is about* *to recount a legend or myth"* (p. 36). In this way the entire introduction is a sort of "*once upon a time*". Thus, the waltz that begins at bar 8 is listened to *in the past tense*. This is a very important aspect of the narrative proposal. By this, Klein is seeking to identify the narrator's voice, his affective distance with respect to what is narrated and his temporal location in relation to what he is recounting (giving rise to the past tense narration).

Klein also attempts to establish the relation between story and discourse during the Ballade's first bars: the f# of bar 3 shakes the initial chord's stability (A flat major) re-meaning it as a Phrygian ii of G minor. The tonal uncertainty remains until the cadence is reached at bar 6. Tonal stability is related to the objective standpoint, whereas the chromatic passage is tied to the way in which the narrator commits himself to the narrated story. Thus, in the first bars, the narrator is set to narrate a story, *from outside,* that is, objectively. But throughout the following bars he gets subjectively involved in the story, until by the cadence, at bar 8, he re-establishes his *objective* position. The rests emphasize the narrator's *coming into* and *going out of* the story. However, the presence of the e flat^4 in the bar 8 chord reveals that the narrator will not achieve complete objectivity.

Klein proposes that a temporal conflict emerges from tensions between *lyric* and *narrative* components. In the Chopin piece, *lyricism* is manifested in "ballroom" compositions (waltzes, nocturnes and mazurkas), while *narrative* appears in the virtuosic style (etudes). Thus, extended compositions such as ballades make use of both styles. Therefore, the narrative character of the composition emerges almost naturally from this opposition. In spite of this important contribution, a comprehensive description of the lyric-narrative opposition exceeds the scope of this chapter, since, as mentioned, the analysis is centred on the beginning of the piece (the first 40 bars).

Although Tarasti's analysis (1994) also includes the piece as a whole, some of his ideas are highly pertinent to this discussion:

(i) The waltz that appears at bar 36 is the one that *leads to dissolution and chaos*. In the small fragment we will consider, the appearance of this theme (figure 10.7) precipitates the action towards the end of the ballad. In this *apotheotic* process, the *cadenza-like* passage at bar 33 *re-conquers* the wide textural space cautiously explored during the introduction, but now with a dominating attitude. Thus, the work progresses towards a more decided and virtuosic character and represents, in the context of the first part, a demonstration of power by the narrator.

(ii) The introduction projects itself towards what follows with the clear intention of *taking control*, a sort of *territory marking*. Thus, the introduction and the waltz are crucial for presenting the piece's musical content. In that sense, the entire passage is continuously discovering what is about to be known.

(iii) The *waltz* theme directly refers to normative organizational aspects. But, knowing that the piece is a ballade, the listener understands that it is not a *true waltz*. The supporting texture also contributes to the passage's allegiance to this norm. As indicated, this norm is progressively left aside (reaching its furthest distance at the bar 33 *cadenza*) and finally reinstated in the cadence at bar 36.

Taking these narrative descriptions of the ballade and combining them with some derivations from the analyses described in the previous section, a narrative is proposed characterized by the following features:

The beginning A flat major chord is strongly questioned at bar 3 when the f-sharp appears. This generates great uncertainty, provoking an extended silence. Indeed, we do not know where we are and where we are going. Therefore, that first silence is a pause loaded with uncertainty. The following passage, with the neighbouring notes around the f-sharp and d, indicates the G minor dominant. Nevertheless, the surface harmony still continues to offer doubts (the e flat^4 at bar 8 acknowledges that "*not everything was ditto*" at that level). The melody, nevertheless, has arrived at the d. We have reached the *Kopftone*. For Schenkerian theory, once this note is reached, the die is cast: we already know the way and the goal is visible through every degree of the progression. Therefore the arrival at that d is essential – doubts are dissipated here. The following silence has another connotation – relief, calm, and meditation? In this way the entrance to the *waltz theme* is *enunciated* from that d. In such way, the introduction and the waltz's beginning are unified. At the same time, the way the cadence at bars 6-7 is set out says that the long note at 7-8 has a different meaning to the previous silences. It operates as a springboard to gain impulse and start the Ballade proper.

As said, the lyrical *waltz theme* does not impel the action but rather the inner states, feelings and emotions, and it is probably a time for internal transformations. What is important does not seem to be the apparent organization of stanzas, but what is happening at deeper levels where a single idea unifies the entire passage. The unity of this passage is therefore what is most important. Understanding the role of certain notes (like the g^5 at the bar 13 register transfer) is important to understand such unity throughout the processes of internal transformation. When the strophic structure starts to distort, lyric and narrative elements are intermingled in a very subtle way. At this moment it is possible to understand that those inner states have begun to be narrated, with forcefully lyrical moments of internal expression and more extroverted moments manifested in virtuoso passages.

The bar 36 cadence marks an important point of inflection. Against this background, strongly unified by the linear progressions at deep levels of the musical structure, and by subtle inner transformations in expression, this is the point of greatest formal inflection. From here, those inner transformations are of such a nature, that the *virtuoso* breaks through into the context of the *lyrical*, making use of a strength supported by an increasing technical dominion.

This analysis will be stopped at this point, knowing full well that this break may seem surprising and also inadequate. The reason for this cut is that the following experimental study is based only on this fragment. The choice of this cut is not arbitrary but obeys the cut produced in the film that is the nucleus of this experimental strategy. As a result from the analysis it is possible to argue that the sequence of the film *The Pianist*, by Roman Polansky, selected for this work, takes the Chopin composition, among others, as material to construct its narrative structure – and certain aspects in particular of the Ballade's prolongational structure as analysed. Next, the way in which some famous pianists make use of the same material will be seen.

10.2 A performance: *The Pianist* by Roman Polansky

This section aims to show how a musical composition is transposed to a filmic format, thereby aspiring to illustrate both the concept of transposition and the notions of materials and the materials-transposition dialectic. The idea is to illustrate a genitive composition-performance relationship involving the prolongational structure. As the film medium has a long history of transpositions, the notion itself may be more comprehensible if it is undertaken from this perspective, thereby making it easier to understand the possibilities of transposition in music performance.

The transposition is a scene from the film *The Pianist*, by Roman Polansky (2002) (see the example 28 in the disc). Some details of the film and the scene are included in appendix V. The way in which Polansky used Chopin’s composition is analysed in this section.

10.2.1 Using the musical structure

There are many studies that analyse the relation between music and image, and the implications of this relation in the audio-visual arts (cinema, television, multimedia, etc.) (Cook 1998b, Lipscomb and Tolchinsky 2005, Simeon 1992). Most of those studies examine how music contributes to understanding the film’s content, or how music and image are integrated *in collaboration*. The aim of this section, however, is to show how the image accounts for an interpretation of the musical composition.

Simeon (1992) proposed different levels in the relation between music and image in the cinematographic context. Following his proposal, it is possible, then, to enunciate at least 3 categories of correspondence between both components of the filmic language: (i) *kinetic correspondence*; (ii) *syntagmatic correspondence*; and (iii) *content correspondence.*

Kinetic correspondence refers to the musical tempo in relation to the speed of the action. This agreement sometimes is obtained by fitting an underlying pulse (characteristic in the *video clip* genre). However, this common pulse is often absent. The scene in question shows scarce movement: only one extremely long take that serves as an introduction to the composition’s introduction, reveals the slow walk of both characters towards the piano. Soon, the captain slowly walks from the piano to a distant chair in the room. The only important and significant movements are the movements of the performance, both the subtle movements of the body, and the fast movements of the hands on the keyboard. Although the piece begins with a *Largo*, it is not possible to say that the tempo is slow. The hand movements, therefore, are the only resource that Polansky can use in the context of the materials to establish kinetic correspondence. The director exactly emphasizes that correspondence in the *cadenza-like* virtuoso passage at bar 33, and on the trill at bar 25. After the *jump* to bar 209, at the *Presto*, the shots are shorter in general, and the longest correspond to the hand movements; the pianist's face is captured in this part in much briefer shots, contrarily to the first part's long and slow shots.

Syntagmatic correspondence has to do with the way in which the music segmentation "fits" the film's segmentation. Simeon (1992) proposed that it is possible to establish a double syntagmatic chain in which elements of the cinematographic segmentation and the music's segmentation are exhibited in parallel, making the reciprocity evident and allowing for a possible approach of the musical content being narrated. Thus, the music is intimately related to the narrative programme.

But music can exhibit a more active and independent function, no longer as an accompaniment, but contributing along with the visual component in the production of meaning. In this way, we can speak of a crossmodal correspondence in the formation of this narrative programme.

Concerning this correspondence, it is clear what point of view of the musical structure Polansky uses. A clear example is the articulation point at bar 36. There, an elaboration of the *x* motif appears, which seems new in the previous sequence's uniform context. In the visual realm, an exterior image is seen. It is the first time the *outside* is shown. This feature is very significant since the scene has been developing for 9 minutes and 37 seconds inside the house. This *new* visual content smoothens the jump to bar 49, avoiding synchronizing with the shot change.

However, it is possible to see, at the beginning of the piece, the most interesting *syntagmatic correspondence*. The first shot begins long before the start of the performance (1 minute 25 seconds; the complete shot lasts 1 minute 53 seconds, see example 28 in disc). It is an extremely long shot related to the extensive initial arpeggio, as if the music existed from before, the first c being the point at which the sequence becomes audible. The following shot (the captain's close-up) is articulated right on the d of bar 5 (the *Kopftone* of the first linear progression). It comprises the extensive silences and the change of tempo (from Largo to Moderato), and finalizes at bar 13 precisely at the transference of register with the octave jump. That is to say, the image unifies the transition from Largo to Moderato and the entire first phrase in an only shot. The articulation points work as phenomenal accents, capturing the spectator's attention (Boltz 1992). Thus, the d, as the *Kopftone*, is emphasized by the visual syntagma. In this way, this syntagma reinforces the linear progression, focussing on its point of departure. For that reason, Polansky's choices seem to reflect a depth interpretation rather than a surface one. Nevertheless, it is possible to think that the image captures the hierarchic structure of the passage: just when the refrain starts, at bar 8, the captain's turn begins (it is the first important movement he makes). Throughout the entire first refrain, the captain moves to the chair. During the second refrain he slowly turns in front of the chair and starts to sit, and is completely seated at the beginning of the third refrain. Therefore the complete shot has 4 parts: (i) fixed face (from bar 5.2 to bar 8.3), (ii) turning and walking (b. 8.4 – 10.3), (iii) turning and sitting (from bar 10.4 to bar 12.3), (iv) (brief) fixed seat (b.12.3 – 12.3). In figure 10.9 this correspondence is observed in the voice leading graphic analysis and the hierarchic relation is indicated, showing two hierarchical levels: the shot level (corresponding to the underlying voice leading of the level, see upper red arc in the figure), and the character movement level (corresponding to formal articulation of the stanza, see lower red arcs in the figure and their correspondence with the bars in the score, which are marking the stanza.

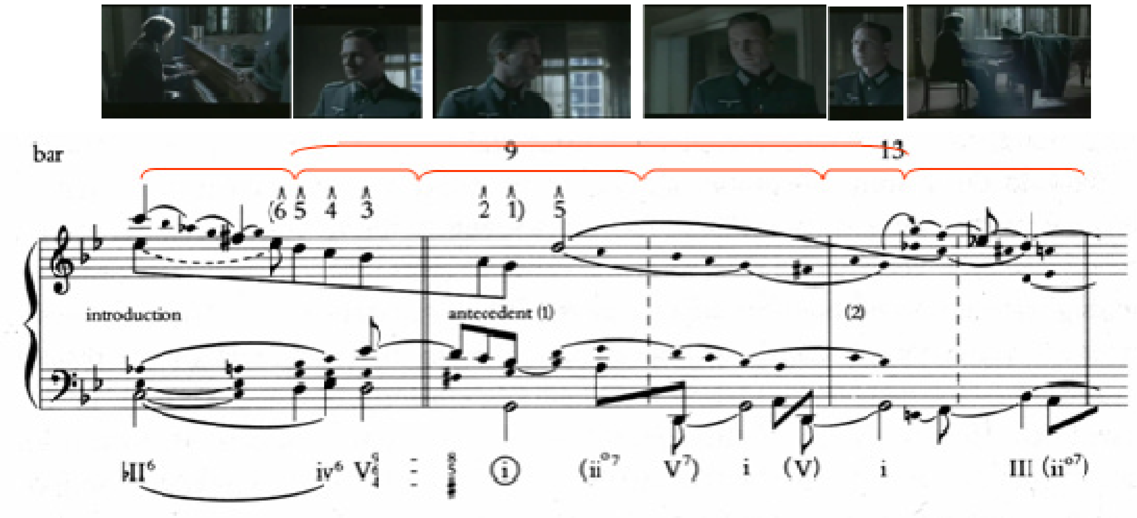

Figure 10.9. *Syntagmatic correspondence in the scene from* The Pianist *by R. Polansky, during the introduction and first stanza of the Ballade in G minor*

The following shot – Hosenfeld seated[2] – goes from bar 16.3 to bar 20.1 – the first half of the second stanza. That is to say, the visual segment matches the articulation of the composition's formal surface (see figure 10.10).

From this point, when the refrain and its linear progressions disappear, where the musical segmentation becomes more ambiguous, both syntagmatic chains abandon such a high level of synchrony. In this section, then, Polansky abandons the *syntagmatic correspondence* as an expressive resource and deepens the third type of correspondence.

The *content correspondence* refers to the direct sound references being seen. This correspondence is more problematic, although certain aspects of the content are easily identified. The correspondence of trivial content in this fragment would be given by the fact that a piano is heard when a pianist is seen (note that this passage focuses more on the pianist and the action of playing, displaying his hands, body and face). However, a subtler correspondence is also revealed. For example, following Klein's idea (2004) related to distinguishing lyrical and narrative gestures, the lyrical gestures of bar 21 tend to be more related to face shots, and the narrative gestures (establishing a *kinetic correspondence*) are more associated with hand shots (Figure 10.10). In this way, the lyrical gestures are visually emphasized with the pianist's painful gestures, his inclined face and the back lighting, conferring a certain mystical atmosphere to the character and accentuating the dramatic entailment between the musical passage and the narrative situation. This relation is openly shown at the upbeat of bar 22 when the gesture of the pianist's face contributes to re-signify it (note that this upbeat is a crucial point in a particularly ambiguous structure). In spite of this apparently strong evidence, what is noteworthy at this point in relation to the musical structure is precisely that just where the musical structure becomes more ambiguous, the syntagmatic correspondence is abandoned and other types of correspondences are brought to bear.

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[2] See in appendix V a deeper description of the film, its narrative aspects and its characters.

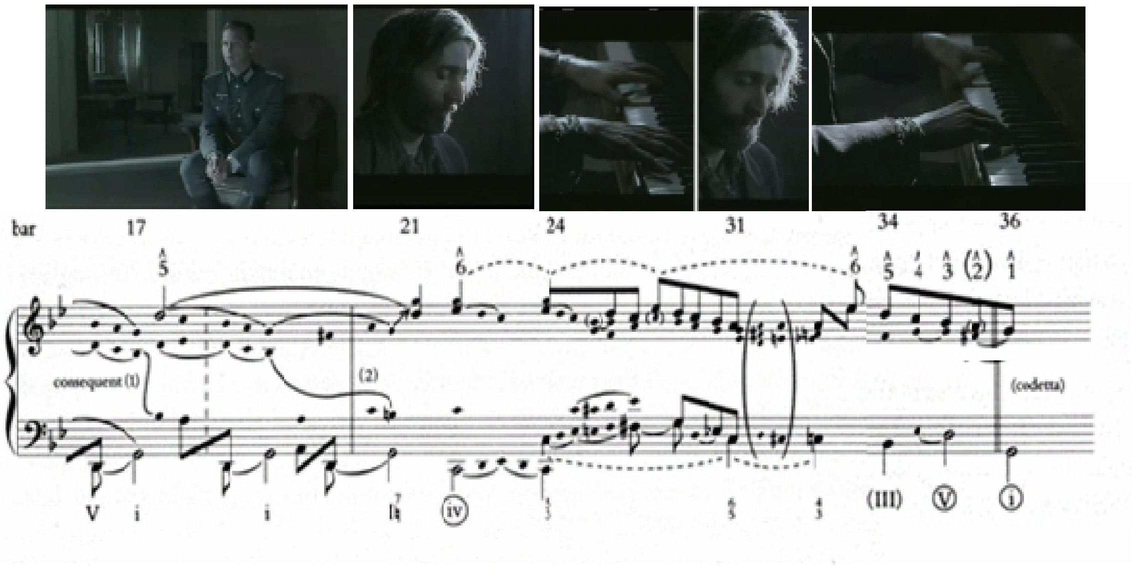

Figure 10.10. *Syntagmatic, kinetic and content rapports in the scene from* The Pianist *by R. Polansky, (mm 16-36 of the Ballade in G minor).*

An obvious content correspondence occurs during Hosenfeld's attitude transformation throughout the pianist's performance, as he is changing his own attitude as a consequence of a new (momentary) relation between them, based on the power demonstration the pianist offers on the keyboard. Remember that this transformation in the power relationships is a characteristic of the compositional narrative (p. 325).

Nevertheless, the passage that shows the most eloquent *content correspondence* is probably the beginning of the Largo. Here, a deep *uncertainty* can be clearly seen, reflecting the content of the first rest (silence). The pianist’s movement, flexing his fingers in that silence, instils doubt in the spectator as to whether he will be able to play and demonstrate he is indeed a pianist. Thus, a clear correspondence between the tonal uncertainty (discussed above, p. 313) and the doubt about the pianist’s future is installed. When the performance reaches the d (*Kopftone*), Hosenfeld’s gesture and attitude indicates, indeed, that *the die is cast* and therefore the following pause is loaded with confidence and relief. Finally, the long note on the $I_{6/4}$ that puts the waltz (and the ballad itself) in motion also puts the Nazi captain in motion (leaving).

In summary, it is evident from this analysis that the musical structure is *a material* used by Polansky in the construction of his *performance.* It is also clear that it is not the only material and that the final artistic product is the result of the way in which the tensions generated by the different materials are resolved in the creative act. Thus, next to the Ballade’s musical structure, the scene is constructed based on the film’s narrative, the technical means of the cinematographic support (montage, colour, lighting), the rhythm of the action, the emotional particularities of the characters (which define different modes of expression), the stylistic particularities of the contemporary art film, etc.

In other words, certain structural elements of the composition are taken as materials for the creation of the scene just as the story and emotional atmosphere are. Thus, some thematic relations (contrasts between the first and second motifs), syntagmatic relations and performance motions are used to model the scene in accordance with many other narrative and visual components.

10.2.2 Brief discussion: performance as transposition

Did Polansky have a script on which to place Chopin’s piece? Evidently, the answer is no. On the contrary, the structure composed by Chopin was the key to creating that scene. The scene is a deep reflection of the depth and surface tensions that the musical structure contains. From this, Polansky took the elements that adjust to the rest of the materials he had. For that reason the first section uncovers the deepest level of the underlying voice leading, whereas the second mirrors surface issues.

When thinking of performance as transposition, the performer proceeds in the same way. Thus, she constructs her own art from a multiplicity of materials. The composition’s structure is one of the main materials but not the only one.

In this way, the knowledge provided by music theory, musical analysis and any other kind of information source related to the composition is not normative for the performance but is relevant for the creation of the piece. All that (often implicit) knowledge allows the performer to model his or her work without risk of spoiling the material. Just like the block of marble that can give rise to infinite sculptures, the same *compositional structure* can give rise to potentially infinite works (see in appendix IV a brief discussion about using an artwork as material). The final work will depend on the nobility of the marble, but its value will be realized through the artist’s creative act: a creative act that can transform a noble block of the very best marble either into a work of admirable art, an ordinary object or a pile of chips and dust.

By all means, the performer has in the piano, different materials than the film director. Nevertheless, the common material, the musical structure, will be present in his or her work, operating dialectically with the other available materials. Timing is one of the most powerfully expressive means of a pianist. In the next section, 5 piano performances of the Ballade in G minor will be analysed in order to observe how the composition's structure is used in each of them to model expressive timing. Contrarily to film timing, performative timing is subordinated to the typical problems of performance (real time, completeness, etc) as seen in chapter 7.

Briefly we can say that the analysed scene's *timing* is characterized by (i) a parsimonious segmentation (relatively long shots) in the first part of the performance, before the beginning of the execution, and (ii) very slow movements except in certain key points of the musical discourse where the movements are very quick (the pianist's hands). This temporal organization may be identified with the underlying voice leading. In summary, the scene *uses* the underlying voice leading as one of the most important materials on which it unfolds its timing. In a similar way to music performance, visual timing is one of most powerful expressive means of cinematographic language, and is therefore crucial in communicating the film's content.

10.3 Five piano performances

Like a film, a piano performance is also a very complex phenomenon in which very varied materials and motivations take part. Due to this complexity, only a single attribute of the performance, *timing*, will be studied here. The choice of this attribute is based on the importance of the temporal experience in nonverbal communication (chapter 8), and the role of time in the narrative experience (chapter 9). Thus, timing is the crucial performance attribute in communicating the musical structure as narrative.

Five performances of the Chopin Ballade in G minor were taken. Among them, the performance recorded by Janusz Olejnizack (2002) (example 29 in disc) for the original soundtrack of the film *The Pianist* was included. The other 4 performances were: Alfred Cortot (1933) (example 30), Vladimir Horowitz (1968) (example 31), István Székely

(1987) (example 33) and Evgeny Kissin (1999) (example 32). Because the introduction, the Largo, is a *recitative-like* passage, comparing the temporal features of a *real* performance with *nominal* timing values (as they are prescribed by the score) is problematic. In addition, as the first part of the introduction has received a very particular treatment in the film, it was not taken into account for the experiment. Thus, the following analyses have been developed from the waltz's entrance (bar 8), up to bar 40, when the film skips more than 200 bars and goes straight to the end of the piece.

The five artists used different global tempo strategies. Table 10.1 exhibits the tempo values for the first stanza (bars 8-16) and for the entrance of the elaborated *x* motif after bar 36, as a sample of the tempo variability throughout the fragment. A progression in tempo is observed towards the sections of great virtuosity that appear further ahead (Klein 2004). The differences could account for different visions of the beginning, according to which some artists (who approach the stanza faster) recognize more of a *ballroom* character for the early waltz (the others would exploit characteristics).

Artist	Bars 8-16	Bars 36-40
Cortot	110	178
Horowitz	105	135
Kissin	90	129
Olejniczak	102	131
Szèkely	121	173

Table 10.1. *Tempi (quarter notes per minute) for the 5 performances at the first stanza and at the presentation of the elaborated* x *motif after bar 36.*

The following graphs adhere to the timing analysis approached in chapter 5. Therefore, they should be interpreted in a similar way. The unit value is the quarter note so that 6 points per bar are exhibited. The numbers on x-axis represent bars.

Figure 10.11. shows at a glance on the one hand the great variability and opposition between Kissin's and Cortot's strategies and on the other, Horowitz's performance as

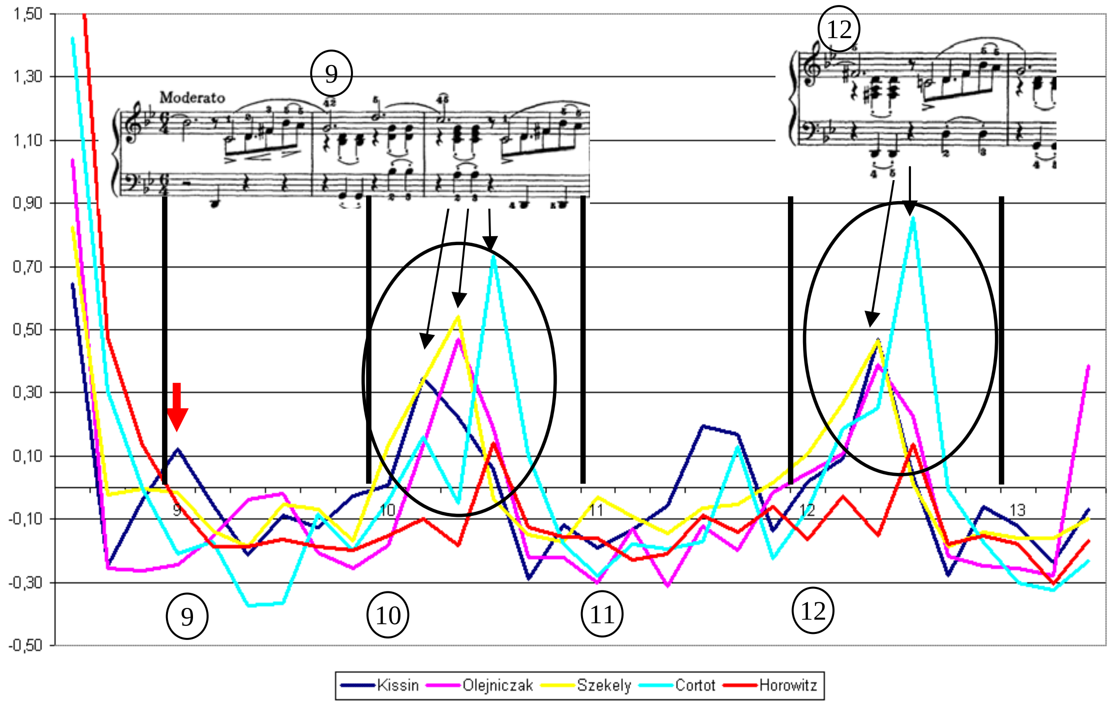

Figure 10.11

being strongly uniform. Additionally, Szèkely's performance presents greater long-term uniformity, as may be seen in the way in which the timing pattern for each refrain is reiterated. In general, the pianists tend to indicate the articulation between the *refrains* of the stanzas. Nevertheless, two different strategies are demonstrated. The older artists (Cortot and Horowitz) lengthen the first note of the *x* motif (beginning of the refrain), whereas more current performances lengthen the last note of the *y* motif (end of the refrain). The same takes place at the end of the second refrain (bar 12). Nevertheless, it is interesting to notice how Kissin and Cortot comparatively emphasize this point, the end of the refrain on the dominant (V), more than the previous refrain finalizing on the ii_7 (Rothstein 1995).

Figure 10.12 shows a different realization of the third refrain's ending, due to the different metrical position of the following refrain's beginning. Here the pianists tend to link both refrains going towards the c-sharp[5] as an anticipation of bar 15, lengthening the last beat of bar 14. Notice that the older pianists exaggerate that gesture. It is also

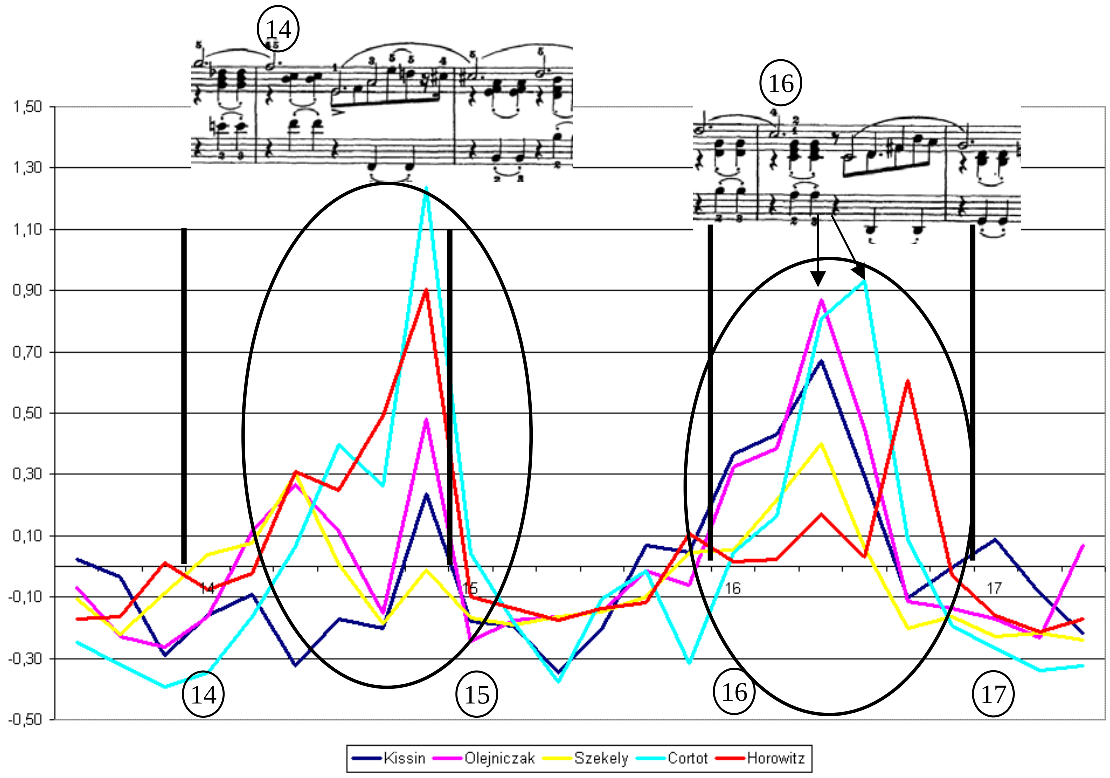

Figure 10.12

important to consider that Kissin unifies the transition from the third to the fourth refrain, reducing the articulatory character of that moment. On the other hand, at bar 16 similar behaviours to those observed at bars 10 and 12 can be detected. Nevertheless both Kissin and Olejniczak achieve their greatest ritardando at the end of the stanza (as Todd 1985 suggests). In turn, Horowitz shifts the lengthening towards the following quarter note.

Figure 10.13 (upper panel) shows a similar behaviour at bars 18 and 20. When leaving the strophic structure, Kissin marks this fact with an important lengthening. He is original in clearly separating the strophic structure from the ensuing more ambiguous region. Nevertheless, Olejniczak also highlights this point. In this case, he lengthens the following g^5 (figure 10.13 lower panel). That great lengthening of the g^5 grants the passage deep dramatic significance. Interestingly, Olejniczak parallels that action at bar 23. In this way, his use of the more lengthened notes segments that unit according to the underlying

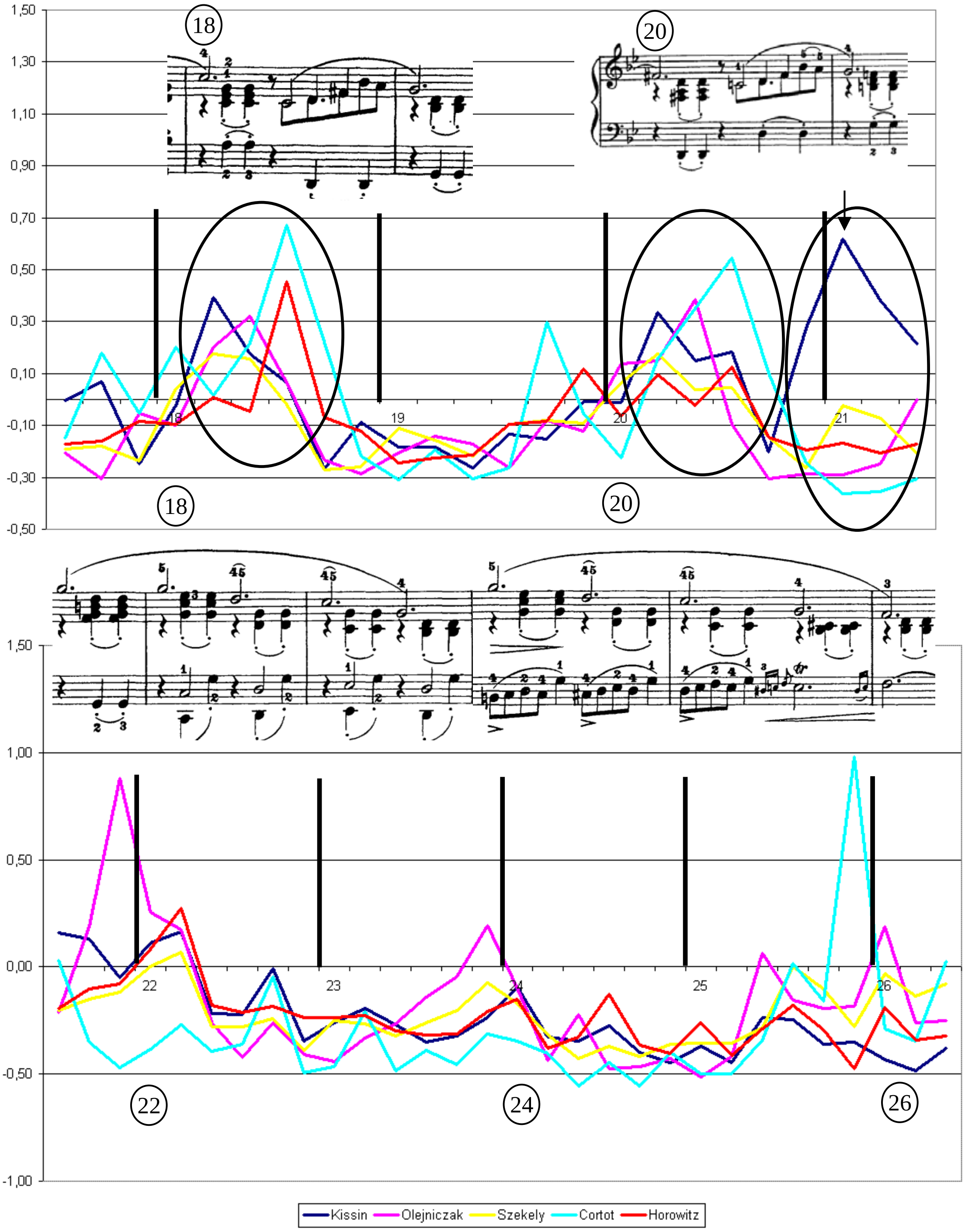

Figure 10.13

voice leading, every four dotted half notes (figure 10.8). On the other hand, Cortot considerably extends the resolution of the left hand trill at bar 25.

Figure 10.14 shows the unfolding of the melodic sequence (figure 10.6) in a context of a relatively faster tempo for the whole of the performance, particularly in Kissin's performance, which, in addition, emphasizes the peaks of the melodic contour of both units with lengthenings of the e flat^5 (bar 28) and c^5 (bar 30). The lower panel exhibits the arpeggiated chord at bar 32 consuming remarkably more time in all performances, except for Kissin's. He performs this arpeggio *a tempo*, which is held throughout the bar 33

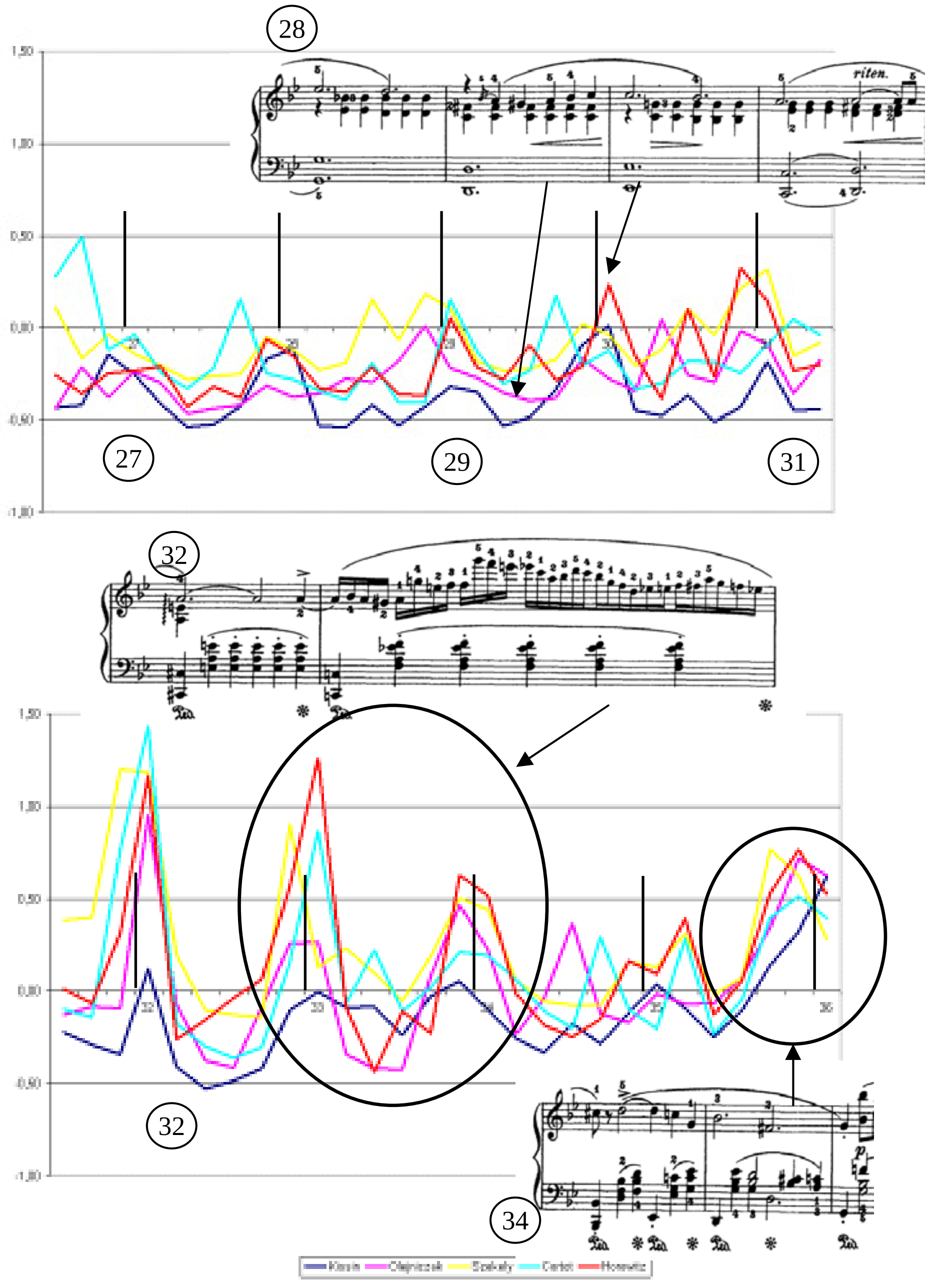

Figure 10.14

cadenza (notice the time homogeneity achieved in that bar) until the cadence at bars 34 and 35. In the end, outstandingly, the five performances agree in retaining the f-sharp^4 of the final cadence, although the ritenuto strategies are diverse.

Finally, figure 10.15 shows the passage of the elaborated *x* motif from bar 36. In it, one can appreciate the way in which Olejniczak lengthens the notes in the bass, emphasizing the offbeat character of the passage. On the contrary, Kissin lengthens the octaves in the right hand, emphasizing the *cantabile* character of the upper voice.

Some notably relevant elements may be appreciated in a more detailed inspection. For this, timing profiles according to each of the melody's notes (instead of each quarter note beat) were compiled. To gain clarity, figure 10.16 shows only the profiles for the Kissin and Olejniczak performances (the former because presents some important characteristics for the following discussion, and the latter because will be the focus in the listening test; the rest of the performances do not present remarkable details at this level). The graph clearly displays how Kissin systematically lengthens each of the *x* motif's a^{4}s. This note is part of the linear progression and shows the conflict between depth and surface

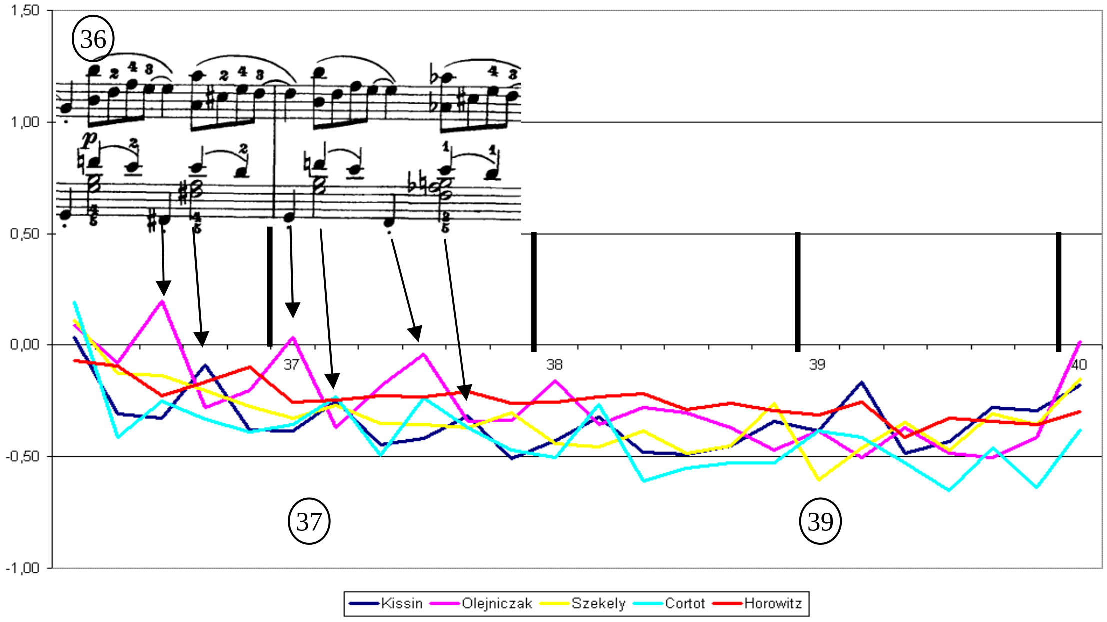

Figure 10.15

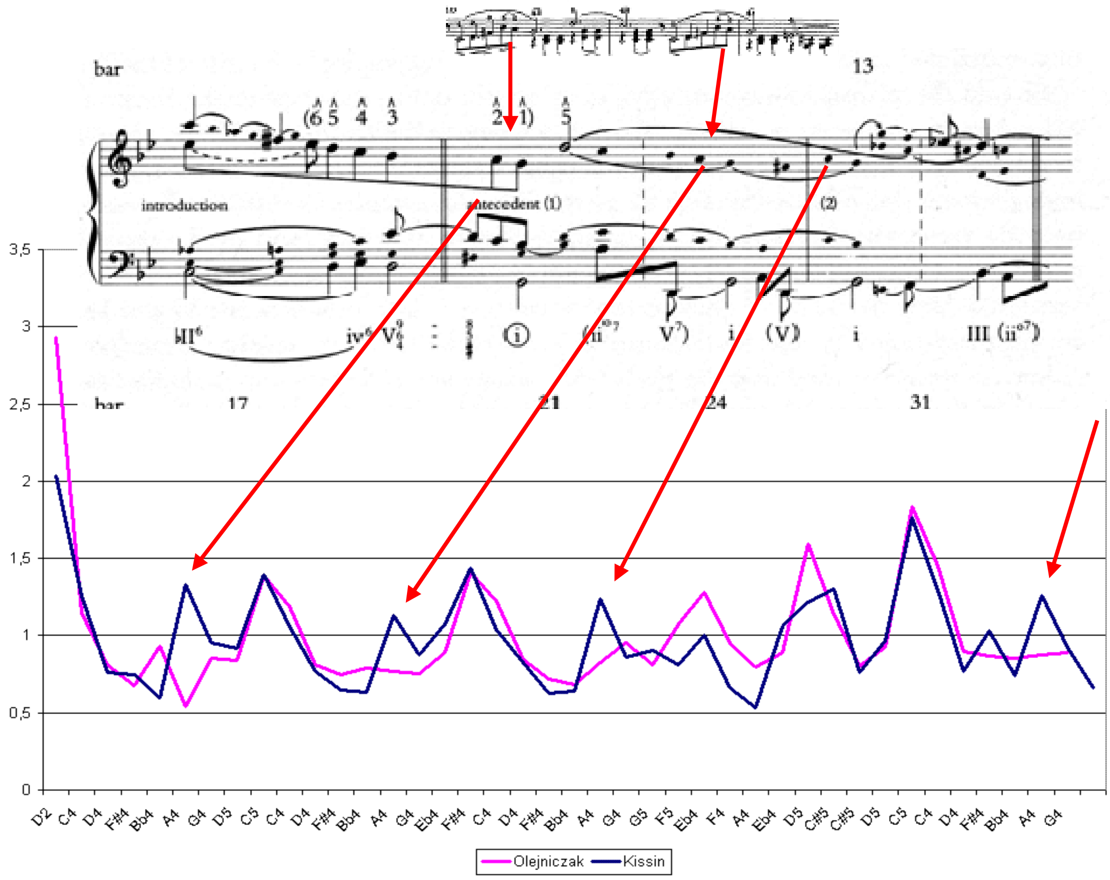

Figure 10.16

in this section. At the surface level the a^4 is located in a very weak metric position and in addition it is the briefest note of the entire passage, therefore, it tends *to go unnoticed*. Nevertheless on a deeper level, it is a key note both to complete the linear progressions and to shape the prolongation of the tonic. In addition, although Kissin also relatively lengthens the first d^2, this lengthening is much less important than the other artists' lengthenings. In this way, Kissin unifies the first linear progression and the passage from Largo to Moderato. With this small detail, Kissin highlights the linear progressions. Remarkably, when the structure becomes more ambiguous (bar 21) he shows a more homogenous timing, free from any underlying voice leading guideline. Therefore, it is possible to say that, like Polansky, Kissin makes use of the underlying voice leading to create his performance. Since he is operating dialectically with different materials to Polansky, his use of the prolongational structure is different. Nevertheless, in both cases the underlying voice leading is a key element for the organization of the narrative. In addition, the progressive acceleration of Kissin’s performance towards bar 33 and his notable homogeneity when performing the *cadenza* make this performance the one with greatest movement at this point (compared to the other performances). (Keep in mind that, at this point, Polansky *activates the movement* by showing the pianist’s hands - kinetic rapport.)

However, can the listener experience the musical structure in the same terms as those used by the performer? The following listening test was designed to provide an answer to this question.

10.4 The listening test

This test is based on the idea that the multimodal redundancy reinforces some information, letting listeners understand some structural traits of the stimulus and organized the experience as a whole (Lewkowicz 1992). At the same time, the set of performance expressive actions may be consider as providing a sort of *intramodal redundancy*. Thus, both kinds of *redundancies* can elicit similar structural attributes, although they use different means for it. In that way, expressive features of a performance would be *replacing* the other modalities’ effects.

For that, a similarity judgement paradigm was used. Judging similarities consists of comparing –although unconsciously – similar and different features of the stimuli (Jameson and Gentner, 2003). Extracting common features entails a previous assessment of the relevant features, which then are evaluated in the light of the relevant properties of the other stimulus. In other terms, if two stimuli are considered as similar, that is not only because they share some common characteristics but rather because their common features are highlighted in some way.

10.4.1 Aim of the study

The purpose of this study is to explore whether listeners make use of the prolongational structure of the piece in judging the similarity between the filmic scene and the musical excerpt. Just as prolongational structure is reinforced in the filmic stimulus by crossmodal redundancy, a performance that reinforces it by *intramodal* redundancy (that is, by the set of expressive attributes) will be consider as more similar.

10.4.2 Method

10.4.2.1 Subjects

One hundred and twenty-five university students (42 female, 87 male), whose average age was 24.8 years, participated in the experiment. All the subjects had at least 1 year of systematic musical training. The average musical experience was 6.1 years. This value was used to divide them in two groups according to musical experience. The group of moderate musical experience, with 84 subjects, had 1 to 6 years of musical training. In the advanced musical experience group the subjects, N = 41, had more than 6 years of systematic musical training. The subjects were randomly distributed in two experimental conditions. For operative reasons both conditions had a different number of subjects. 77 subjects participated in the experimental condition and 48 in the control condition.

10.4.2.2 Stimuli

An extended scene from the film *The Pianist*, by Roman Polansky, was used as the cinematographic stimulus for the experimental condition (example 28 in disc). The scene went from approximately 1 hour 52 minutes from the film's beginning to the moment at which the performance reaches bar 40 of the composition. In this way some important moments for the scene's narrative (in particular, aspects related to the use of music and the sound track in the narration context) were included in addition to the performance of the Chopin Ballade. This stimulus is the *experimental video clip.*

For the control condition a *control video clip* was created using a series of neutral images (big boxes and doors) with a non-coincident montage without any observed structural points in the score, and a slow and constant camera movement (example 34). In this way, any kind of *syntagmatic, kinetic and content correspondence* between the images and the musical piece was intentionally avoided. The scene's sound track used in the experimental condition was attached to those images. In this way, in both conditions, the same performance of the Ballade in G minor was heard, but totally different images were seen.

Five *sound clips* were collated by using the five analysed performances in the previous section taken from bar 3 (fading them in during that bar) up to bar 40 (fading out from 40.1 to 40.3) (examples 29-33).

10.4.2.3 Apparatus

The video clips were projected using a computer connected to a data projector on a white, wide screen (cinema style). The sound clips were recorded on a CD and played on a stereo sound system. The equipment setting was similar for both conditions.

10.4.2.4 Procedure

The subjects first saw the video clip without receiving specific instructions. In the case of the experimental condition a summary of the storyline, from the beginning to the moment of the scene of the video clip was told to the subjects, as a means of contextualizing the viewing and involving the subjects in the emotional atmosphere of the film. Next, they were asked to listen to the five sound clips. After each sound clip they were asked to indicate their judgment of similarity between the performance in the sound clip and the performance in the video clip using a nine-point scale. After that, they filled a brief questionnaire with personal data.

In both conditions the subjects did not know the procedure at the time of watching the video clip, that is to say, they did not know they would have to compare the performances, in order to avoid them concentrating exclusively on performance aspects to the detriment of visual aspects. In all the cases the subjects knew that the task was related to research in music performance.

10.4.2.5 Design

In the experimental condition the subjects watched the *experimental video clip* and then the 5 *sound clips* with a few seconds between performances in order to make the similarity judgment. In the control condition, the *control video clip* replaced the experimental video clip. The test was developed in small groups (8-10 subjects each) that listened to the 5 sound clips in random order.

10.4.3 Results

A repeated measures ANOVA with *Artist* as the within subject factor and *Condition, Instrument, Experience* and *Gender* as the between subjects factors was run. The results are displayed in the graph in figure 10.19.

The *Artist* factor was significant ($F_{[121\text{-}4]}$=3,535 p<.007). The *Condition* factor was also significant ($F_{[124\text{-}1]}$=19,293 p<.000) revealing that the subjects in the control condition tended to consider the performances in the sound clips as more similar to that of the video clip. The film would apparently be weakening the similarity. Thus, the experience of the musical performance appears to be different when accompanying an abstract image than when associated with the film’s narrative. Nevertheless, keeping in mind that the interaction between the *Condition* and *Instrument* factors gave a marginal probability ($F_{[121\text{-}2]}$= 4,699 p= .032), the fact that the pianist subjects presented greater differences between both conditions may be appreciated. Consequently, the film context seems to affect pianists more than non-pianists.

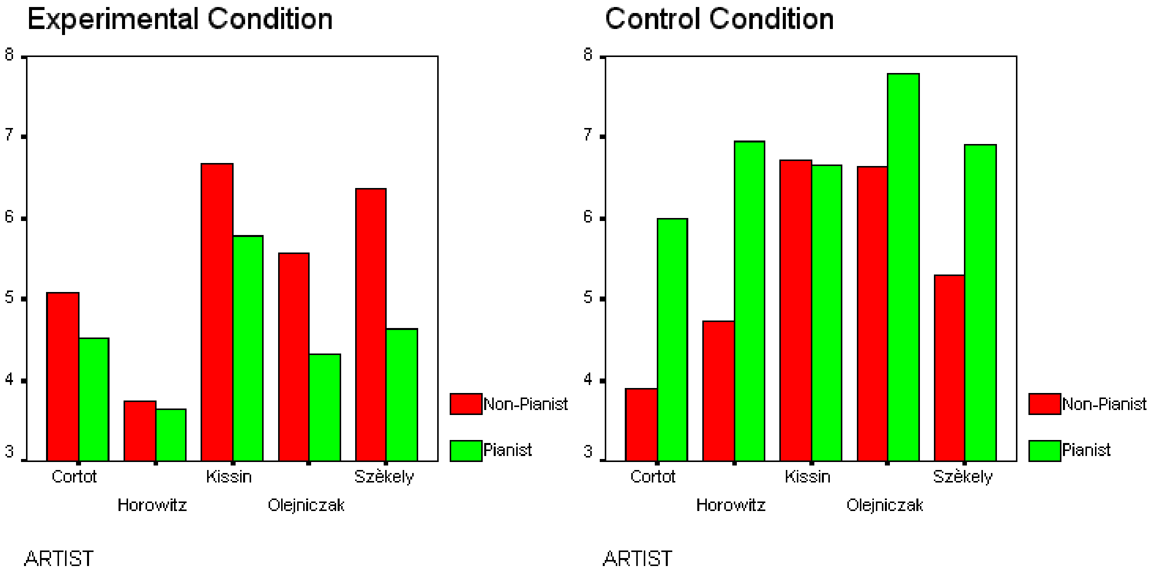

Figure 10.19. *Results of the judgments of similarity between the performance in the video-clips and the performances in the sound-clips, for the experimental and control conditions (for pianists and non pianists).*

What is more relevant is the interaction between *Condition* and *Artist* factors, which was also significant ($F_{[118\text{-}6]}$= 2,674 p= .032), showing that the similarity judgments were different between both conditions. In the control condition, the performance judged as most similar to the video clip's was Olejniczak's (the original). Contrarily, subjects in the experimental condition considered Kissin's and Szèkely's performances as more similar than Olejniczak's. A *post hoc* contrast revealed that only the similarity judgments for the performance by Kissin and Olejniczak were significantly different ($F_{[1\text{-}75]}$=6.754 p = 0.01). In other words, the subjects who saw the scene from the film considered Kissin's performance as most similar to the performance in the film than the performance that was indeed *in* the film, Olejniczak's.

10.4.4 Discussion

The notion of *transposition* applied to music performance permits seeing the performer's activity as a creative act. Speaking of transposition implies recognizing both the similarities and differences that transpositions present with respect to the source text. Similarities and differences depend on the way in which the original text interacts with the other materials in the artistic production. In turn, the notion of transposition allows overcoming any type of determinism in the relationship between the produced work and the source text.

The transposition examples analysed in this chapter account for the fact that the musical structure is *just one of many* in the set of available materials for the creative act. As well as the difference between the materials involved both in the filmic and in the performative transpositions being obvious, there also are different materials involved in the different performative transpositions. The results of the experiment presented here account for this. For example, we have seen that performances by Cortot and Horowitz were similar with respect to certain behaviours that differentiated them from most contemporary performances. Evidently, materials relative to the time of production are involved in the work's creation. The dialectic relation that the musical structure maintains with the set of those other materials directly influences the value of the work's verisimilitude. For that reason, even in the case in which one considers such performances as *old fashioned*, they maintain their artistic quality. It also probably contributes to the verisimilitude (in aesthetic, not historical terms!) of the film.

The analysis of the film used in this experiment accounts for the transposition from a musical text to a filmic support in the context of the creation of a more complex filmic narrative. But more interestingly, the underlying voice leading, as it arises from the analysis of the musical text, may be one of the most important materials in the creation of the cinematographic product. If the prolongational structure can be involved in such a creation, is it sensible to think that it may also be involved in the performative creation, and if so, how?

Both *kinetic* and *syntagmatic correspondences* between image and compositional structure are related to the time configuration. Knowing that timing is a crucial factor in nonverbal communication and that a key for such communication is linked to identifying the *coherence of the temporal structure* (see p. 277 and ff.), it is possible to affirm that we can identify sequences of events that share attributes of their temporal organizations.

We have presented the strange results of an experiment in which an illusion arises by which a musical performance (that of Januz Olejniczak) is more similar to another (Evgeny Kissin's) than to itself. It is evident that the stimulus characteristics perceived by the subjects on seeing the film included much more than those of Olejniczak's performance. And it is also obvious that those characteristics included not only the visual aspects of the stimulus but also its narrative aspects. What is not so axiomatic is the fact that the other performance, Kissin's, could provoke a similar experience from its expressive particularities.

Timing is probably the most powerful means of expression in musical performance. We have seen that it contributes to communicating emotions, structural characteristics and kinetic images, among other factors. In the analysis of the five performances of the Ballade in G minor, we have identified particular timing characteristics in the different performances. Many of those aspects may be associated with semiotic interpretations (see p. 73 and ff.) of the musical structure. In particular, the performance by Evgeny Kissin seems to be associated in its first part with an underlying voice leading interpretation. By using rubato, the performer marks certain notes that are important in conveying the underlying voice leading. Interestingly, the rubato thwarts the expectations stimulated by the piece's time, and proposes a performance time. In other words, from this conflict a double temporality emerges, splitting story time from discourse time and generating a particular temporal tension. As we know, the configuration of the narrative time emerges from this tension – a configuration that reflects the tensions between "the time of the things in the world", in this case the composition, and a fictional, imagined, invented time, recreated in that tension. For that reason, it is possible to affirm that through the small timing details of Kissin's performance, the listener is guided towards a timing experience characterized by: (i) a parsimonious segmentation (at least more parsimonious than that of other performances), and (ii) an idea of movement that begins very slowly but reaches peaks of speed in the virtuoso passages (at least, a greater relative speed, when comparing this passage to the earlier tempo). Thus, that time configuration (the time configuration provided by the sound's timing) can bring the listener closer to the visual timing's configuration.

According to classical psychological approaches judging similarities involves the identification of common structural aspects (Jameson and Gentner 2003). However, in the experiment presented here, the similarity judgment arises as something much more complex. The five performances differ basically in three dimensions: timing, dynamics and sound quality (timbre). On the other hand, the scene from the film and the five piano performances are very different artistic facts. However, they share some attributes. The most obvious is that both the performances as well as the film are based on the same musical composition: the Ballade in G minor. Of the three distinguishing performative characteristics, timing is the only one that takes part in visual language. We can speak of *visual intensity* and *quality* when talking about the image content of a film, but an analogy with the dynamics and timbre of a performance involves metaphorical understanding, whereas at the timing level the relation is direct: image and sound regulate the passage of time in a particular way giving rise to a particular and unique time experience. The scene also has a sound quality and musical dynamics, of course, but these attributes are brought to the scene by the sound track, not by narrative or visual components. It is absolutely plausible that the characteristic in play when judging the similarity between performances, is clearly timing.

As well there being evidence that (i) multimodal redundancy favours communication and that, for example, speech is perceived considerably better when accompanied by visual stimulus (Lewckowicz and Kraebel 2004), and (ii) music contributes to the understanding of the narrative content of the cinematographic work (Lipscomb and Tolchinsky 2005), it is possible to suggest that the visual stimulus contributes to an understanding of the musical composition. In early childhood, the modality of the stimulation is less important that its temporal organization (Lewkowicz 1992), since temporal phenomena seem to be processed independently from the stimulus modality (Wittman and Pöppel 1999/2000). In the same way, in the experience of musical expression, the temporal organization is more important that the traits (or the modality of such traits) that determines it.

According to Gibson (in Lewcowicz and Kraebel 2004), sensory stimulation is registered by multiple systems that are sensible to amodal invariants. The amodal invariants are those properties of the stimulus that remain common in different modalities. Although whether the integration of the invariant properties requires some level of inner processing is under discussion, it is possible that crossmodality, that is to say, the process by which one *shifts* from one perceptual modality to another, is governed by the equivalence of such invariant properties. In the temporal dimension, for example, equivalent ways of organizing the passing of time may take place around two key relations: (i) the duration of time, and (ii) the sequence of events in before and after terms. The duration of time is not absolute and mainly has to do with the organization of time passing in meaningful units: for example, in how many units does this time pass? What are the proportions between these temporal units? What is the relation between successive durations? and so on. In this way what is absorbed in the time experience is a particular organization that goes beyond the perceptual particularities of what is being perceived through a specific modality. This idea resembles the concept of *activation profiles* by Stern (1985) (see chapter 8). According to this, perceptual experience in early childhood is not retrieved through the specific representation in the modality of the stimulation, but through registering the *activity* the stimulation assumes at every moment in time.

Thus, the passing organization also obeys the salience of particular stimuli. For example, in the film, the d note at bar 3 becomes salient due to the shot change. In Kissin's performance, that same note becomes salient by the structural importance it acquires when the underlying linear progression reveals itself (by marking the a^4 at bar 8). That is to say, both stimulations impel the d note, although using very different resources. It is necessary to consider that the d note would be indirectly impelled in Kissin's performance, through implicit knowledge of the linear progressions the listener has, provoked by the emphasis on the a note.

We can certainly speak of crossmodal equivalence because the visual stimulation, on the one hand, and the microtemporal stimulation, on the other, provoke equivalent organizations of passing time. This should not induce us to think that we are speaking of equal *timings* (visual and expressive) in terms of real durations, or proportions that determine periods in which time could be segmented. The process by which information circulates from one modality to another is not a simple translation. On the contrary, it involves building an abstract, amodal format from which it is possible to recognize any sensorial modality (Stern 1985). When subjects matched Kissin's performance with the film they were based on that abstract format. Possibly this format is (or at least is analogous to) the prolongational structure as it has been previously analysed. The experience of time in the musical work is much more complex that the timing of any one of its components. It is the result of tensions provoked between all the simultaneously experienced temporal organizations. The story-time and discourse-time dichotomy emerges here in a more complex way as there may be manifold stories and discourses, where the novelty of every moment in the inexorability of passing time makes each experience unique.

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Summary. In this chapter the concept of *transposition* from a musical composition, Chopin's Ballade in minor G, to a cinematographic work, was exemplified. This example showed that certain features of the temporal organization of the scene's visual components account for one of the transposed contents: the musical (compositional) structure, particularly the prolongational structure of the piece. In addition 5 performances of the same composition were analysed in terms of their expressive timing attributes. One of them was also understood as a transposition based on that piece's prolongational structure (*prolongational* performance).

A listening experiment based on the similarity judgment paradigm was carried out. In it, subjects were asked to judge the similarity between the five performances studied and the musical sound track of the analysed scene (the control condition stimulus consisted of using that sound track on a different visual content with a different temporal organization). The results indicate that the listeners considered the *prolongational* performance as being more similar to the sound track of the film than the movie's true performance. These findings suggest the reception of the expressive attributes is crossmodal based on their temporal organization, just as with intersubjective experiences in early childhood. Both temporal organizations, the film's and the performance's judged as most similar, were based on similar contents. In this way, both *transpositions* are considered as equivalent in the organization of the course of time. In other words, both temporal organizations give rise to narrative structures that identify the one with the other. These narratives would be elicited from considering the prolongational structure of the music composition as one of the materials used in both performative works.

Chapter 11: Conclusions

Arroz con leche, me quiero casar
con una señorita de San Nicolás
que sepa coser, que sepa bordar
que sepa abrir la puerta para ir a jugar[1]
Traditional, Argentina

Pondering on the role of the prolongational structure in performance seems to be a scholarly extravagance. Nevertheless, throughout this investigation, this preoccupation has extended across an ample range of problems that are central in attempting to understand music as communication. The topic's specificity has allowed the view that an accurate treatment of the communicational experience in music making should not only include a current description of the problem, but also an understanding of the genetic processes that gave rise to that current state in the first place. Thus, the examination of such a specific aspect of performance as the role of the prolongational structure within it, has shown, throughout this thesis, that communicational problems, as psychological topics, do not only acquire meaning when understanding their ontogenesis and phylogenesis, but can also be explained when framed within a given culture's historical process. Tonal musical culture was a favourable realm for reflecting in this way. Within that broad field, the performance of 19th century solo piano music in particular was the main concern. Of course, this choice was the result of personal and affective matters. Nevertheless some additional considerations strengthened the decision: (i) this music represents a period in which the performer's activity was seen as being clearly separated from the composer's, in which the former was culturally valued specifically according to his or her role; (ii) consequently, this choice allows circumscribing the problems of performance to clearly performative issues, including both real time and contingency matters; (iii) since this music, traditionally, is written music, it presents important methodological advantages in researching expressive performative attributes as different from compositional features; (iv) the selected repertoire does not directly involve religious ceremonies, dance, literary texts, etc. thereby making it possible to say that it is music to be listened to for its own sake; (v) tonal music, and the chosen repertoire in particular, has given rise to important theoretical endeavours about the notion of *depth* in music, which as approached here is related to the *prolongational structure* and thereby links communication matters to non-explicit contents; (vi) the discussion on meaning and other types of psychological processes in tonal music have given rise to important investigations and academic debates that serve as the basis for the current research; (vii) this repertoire has crossed different times and subcultures, allowing purely musical structural matters to be distinguished from the influence of historical, social and cultural contexts, finally (viii) because of the versatility of the current musical production context, many of the conceptions belonging to different subcultures and periods coexist and still maintain their effect today in this sort of ideological and cultural Babel.

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[1] *Rice pudding, I want to marry / a young lady from San Nicolás / may she know how to sew, may she know how to embroider / may she know how to open the door to go out and play*

Concerning this last point, in addition to the choice of the object of study, it is important to remark on the ideological standpoint from which the topic is approached, since in attempting to be relatively independent from matters of cultural hegemony it has permitted access to a broader perspective of the problem. This view was exhibited throughout this work and will be considered in this final chapter.

11.1 Prolongation, performance, reality and idealization

Some important reflections arose from considering music performance as communication. The first concerns the very concept of music performance. Even within the cultural limits of tonal western art music, different conceptions of music performance are not only debated in the academic field but also coexist in practice. Interestingly, in analysing those conceptions, some ideas about music, both as cultural creation and as behavioural predisposition, influence the definition of musical performance, emphasizing the importance in this discussion of the academic realms that approach music as such a diverse phenomenon. From the beginning, it has been emphasized that the preoccupation here is mainly pragmatic. Nevertheless, the discussion has been located in a field of confluence of different disciplines. In particular, the relationship between musicology and psychology occupies a central place in this confluence, although other areas have been involved as well.

In the history of western music, music performance as a *way of making* music is clearly split from the activity of music composition. Paying attention to this split was relevant here since, from the psychological point of view, those *ways of making* music are related to two different modalities of artistic thought: (i) *projectual thought,* characterized by a time of the creative process that is fundamentally different from the time of the artistic product, and (ii) *performative thought*, where the time of the process is either the same as or compatible with the time of the artistic product. It became apparent that they are actually never absolutely independent from each other, although the nature of each artistic activity is typically characterized by a greater presence of one of them. In this way, from the very definition of the problems of performance and communication, *matters of time* come into play. As seen, and this will be considered more deeply throughout this chapter, this is the core of the problem as considered in this thesis.

Thus, music performance, understood as a *way of making* music predominantly governed by performative thought, defines its range of influence according to the function or role it is carrying out in the artistic fact. At one end, a supportive function defines the activity of music performance as logistic in nature. In it, the performers' actions are determined by their acquiescence to another person's will and are evaluated according to how they adjust to that command. At the other end, an expressive function characterizes performative activity as cathartic in nature. In it, the primary target is the performer's self expression, so the activity is appraised in the light of the originality, personality and individuality of the artistic product. It was argued that the history of Western music performance is the history of the tensions between the expressive and the supportive functions.

Thus, thinking about communication in performance in a particular cultural context leads us to characterize those tensions throughout history. Specifically, in chapter 2 three historical moments in the performance of the chosen repertoire were briefly revisited. According to these moments three models of performers - the romantic, the modern and the postmodern performer - as icons were characterized by the way in which those performative functions are involved. Between them, the modern performer was particularly of interest for two main reasons. The first was the strong epistemological affinity noted between the modern performance programme and the development of classical cognitive science. This is important because most psychological studies in music performance are very close to classical cognitive science's dominant paradigm. The second was the fact that these modern performers allowed one to see a particular way in which the power relations between performers, composers and audiences take place in such a way that their function noticeably approaches the *supportive* end of the continuum.

The second reflection concerns the communication content. That is to say, what is communicated? This leads directly to the realm of musical meaning, and particularly to meaning in music performance. In chapter 3 it was seen how prolongational theories of tonal music have approached the problem of content. Prolongational theories offer a particular way of understanding tonal music. For performance, this particular way is extremely appealing because it allows glimpsing bonds between tones that are not explicit in the score. This entails, on the one hand, the fascinating interpretative idea that the work holds something to be discovered, generally viewed as something *profound*. The idea of *depth* is related to the idea of *content*. In other words, prolongational theories provide an answer to the problem of music content, placing in view one of the most interesting performative issues, the problem of *interpretation*. Although *performance* and *interpretation* are frequently used as interchangeable terms, it is not always clear that this implies that there is something to be interpreted (Eco 1992, Imberty 1992b). The objectivist tradition reduced the interpretative labour to decoding tasks fitted to *a priori* rules and principles that guarantee the imposition of the *intentio operis* and the *intentio auctoris*. On the contrary, the romantic tradition approached interpretation as a matter of imposition of the *intentio lectoris* (as interpreter). Interpretation as process objects to some of the pillars of the classical cognitive science’s generative paradigm. Simply put, the pitfall is the idea that, when interpreting, the subject must choose the relevant information from a set of available data. Nevertheless, the scope of the cognitivist paradigm has been widened by an immense amount of studies approach clearly interpretative problems from a classical perspective (Jackendoff 1983, Lerdahl and Jackendoff 1983, Grice 1989). This was the perspective of the first experimental endeavours (chapter 5 and 6, appendix 3).

But, on the other hand, prolongational theories of tonal music seem to offer a comfortable setting for music performance, in providing a sort of conceptual scaffolding to face the high cognitive demands of certain typically performative problems such as *unity* and *continuity*. Thus, prolongation appears both as a promissory and a provocative concept to delve into the problem of communication in performance. It is an idea that brings the *intentio lectoris* to bear, while *objectively* intending to emerge as *intentio operis* from the score as was written by the composer. Nevertheless, the provocative nature of the idea is revealed through a pair of disturbing paradoxes. The first shows that the affinity and connection between prolongational theories and performance have been put forward by the objectivist tradition, in which interpretational matters have relatively little space, because (i) it considers a determinist structure-performance relation, in which interpretation is diminished because the *supportive* function of the performance is blown out of proportion; (ii) music theory is seen as regulating that supportive function; and (iii) music theory presents a scientificist bias. In principle, this paradox seemed not to offer any impediment for our research beyond appearing as ironic in the history of musicology. Nevertheless, in the light of the empirical research (chapter 5), it can be said that it was very difficult to interpret the idiosyncratic components of the performances while understanding the theory as normative. Originality and individuality in performance tended to break all kinds of bonds between theory and performance that were susceptible to being identified with an *a priori* normative format.

The second paradox is linked to the fact that the prolongational theory based on voice leading (the less cognitively oriented, the less objective, and the most interpretational), is the more associated, theoretically, to performative problems. Thus, before approaching any empirical endeavour in search of explaining the role of prolongation in communication in performance, it was necessary to examine this paradox in order to evaluate whether such research was worth while or whether the association was confined to a theoretical sphere.

Prolongation is a concept that arose from and was strongly studied from a theoretical point of view. Nevertheless, the attempt of transferring it to the factual domain of performance carries strong epistemological doubts. How does prolongation attain a factual status? The objectivist tradition in music performance itself has significant problems with this. In spite of the elegance of certain proposals, the prolongational structure has been an impediment for the objectivist intention of mapping the musical structure in performance (Berry 1989). Nevertheless, in order to situate adequately this difficulty it is important to bear in mind that this problem arose from the transfer of Schenkerian ideas to the English speaking ambit. Although, as has often been repeated throughout this thesis, Schenker himself was strongly motivated by performative issues and conceived all his theory from a critical point of view regarding the problems of playing music, his perspective of the problem was nevertheless clearly romantic. Even though he used to request the hand “to obey” the background and middleground, accomplishing this goal was indescribable and inexplicable for him. In no way did he have a sort of mapping in mind. The problem of *reality* of the Schenkerian programme is an objectivist matter. Schenkerian psychologism, linked to aesthetic interests, was not impatient to demonstrate its factual reality.

Therefore, this paradox emerged when Schenker’s disciples arrived to North America and tried to pay tribute to their teacher in an atmosphere in which his rhetoric and figure were uncomfortably received. On the one hand, they were ideologically very contentious in the atmosphere of the postwar avant-garde period because of their conservative attitude and German inclination. But, in addition, the Schenkerian discourse did not adapt to American scholarship, in the heat of the institutionalisation of musical specialities as academic disciplines (see chapter 2, pp. 34 and ff.), and in an atmosphere influenced by an empirical psychology just before the imminent cognitive revolution. For that reason, not only the theory's rhetoric, but also its ideological foundation had to be adapted to the new cultural atmosphere. Thus, American Schenkerism acquired a psychological character that would be adopted by cognitive psychology, extremely attracted by its empiricist chimera (theoretical systems for modelling the musical experience in terms of hierarchic structures, and susceptible to being expressed in the form of rules). The *Generative Theory of Tonal Music* (Lerdahl and Jackendoff 1983) is perhaps the most honest expression of this tendency; *honest* because it recognizes that Schenker is not what a cognitive psychology of music needs and abandons it without looking down upon many of its contributions. Nevertheless, its prolongational perspective is new and does not reflect the Schenkerian problems.

The paradox is then manifested in the considerable emptiness found in psychology of music research that approaches the problems of expressive music performance from the point of view of a topic present in the theoretical literature. A way of going beyond this paradox could have been to abandon the Schenkerian perspective of the prolongational structure in order to adopt more *cognitively oriented* prolongational theories, even while overlooking the issues of voice leading and its affinity with performative problems. Another way was chosen which consisted of revaluating the original Schenkerian model according to a more contextualized musicological approach. This reconsideration did not imply an ideological recovery or commitment with the original programme in any way. Instead, it involved an awareness of that programme's musical and general cultural context, manifested throughout this thesis in (i) limiting the object of study to the musical repertoire included in Schenker's work; (ii) extending the determinist relationship in order to include aspects of the configuration of the musical form by the voice leading as this seems to have been the main preoccupation in Schenker's mature work; (iii) investigating alternative epistemological statuses for prolongation as a theoretical construct in the context of current musicology and music performance; and (iv) searching for both musicological and performative foundations (mainly related to *individuality* and *originality* in performance) that provide an account of the factual role that prolongation might play in music performance and listening.

In particular, the discussion about prolongation as a sign (p. 72 and ff.) allowed the linking of analysis and performance more closely, both influenced by the problem of interpretation from a musicological and a psychological point of view. The prolongational structure considered as the result of *abductive* processes was more compatible with the way in which performers usually generate their own interpretative criteria, beyond any objectivist chimera that may limit the psychology of such structural components to *deductive* and *inductive* processes.

This setting allowed the establishment of a solid but extensive frame to determine coherently the circumstances under which a performance may be understood as *prolongational* – or as *containing the prolongation* – in opposition to another that might be considered as *non prolongational.* In this way, the systematic microstructural analysis described in chapter 5 was carried out.

11.2 On the objectivist point of view’s range of influence

Going through these issues of interpretation allowed an understanding of how the performer’s *semiotic interpretation* can be identified with the listener’s *semantic interpretation* (p. 73 and ff.). Nevertheless, to complete the communicational process, the listener’s reception of the performance gave rise to new problems related to the aim of leading the theoretical construct of prolongation to a factual sphere, now in the realm of reception. The objectivist perspective cannot do anything with prolongation other than confine it to the field of *percepts* and/or *concepts*. In this framework, psychological phenomena are explained through the *objective* description of stimuli and the way in which significant information about them is organized. A strong postulate of classic cognitivism is that the structure of the object captures the processes taking place in the subject. The subject's behaviour will have to show some direct correspondence with this stimulus's objective structure, in order to say that a model or theory surpasses the theoretical scope and is manifested in the factual sphere. This behaviour will become evidence of the *cognitive reality* of the model or theory. But what kind of behaviour can feasibly be expected from the prolongational structure? A broad debate about this would widely exceed the scope of this work (see Martinez 2007). Nevertheless, an important part of the listening experiments included in chapter 6 sought to answer this question.

We know that, within the objectivist tradition, the good performer is not the one who chooses, but who knows, discovers, and learns *what has to be done.* The composition is a *generator* of behaviours that the performer learns to carry out in performance. In the same way, the performance is a generator of responses that the listener learns to give. From this perspective, the psychology of communication in music performance should explain how those behaviours are generated in terms of the descriptions of the composition (and the modifications generated while performing). The experimental psychology of music has concerned itself with gathering empirical evidence to guarantee this. Here the same was done, in reference to the *prolongational* descriptions of the composition.

Most of the evidence gathered in the studies in chapters 5 and 6 points in this direction. This evidence suggests that many aspects of performance and its communication to the listener are susceptible to the adoption of a format that matches the generative paradigm, but it also sent a warning signal as to the range of influence this perspective can offer the problem.

In the first place, the role the prolongational structure can play in performance and communication seems to be associated with a personal and original search for the musical structure's expressive meaning and its accomplishment in performance. Certainly, the problem emerges from the idiographic concern of *interpretation* in performance. When examining performances from a global perspective, analysing, for example, *average behaviours*, many behaviours were shown as fitting rules. However, as the examination became more individualized, *codifying* the performers' actions according to nomothetic statements became more difficult. In these cases, expressive resources seemed to be associated to different intentions.

Concomitantly, the bond between the peculiarities of the musical work as derived from its structural analysis and the performer's actions was viewed as very sophisticated. Performers's reflections about the piece are logically included in performances, but this inclusion is hardly ever perceived as banal or trivial. On the contrary, such an accomplishment always tends to be highly idiosyncratic. Musical structure is not considered as normative, nor as triggering serial actions according to pre-established guidelines, but rather as an excuse to organise such actions, a frame to fit the ideas into. In this way, structural ideas shape the performance context in which performance actions acquire coherence. As a result, the same action can work in different ways in different performative contexts. For that reason the coherence of the performance arises from the establishment of *contextual (structural and microstructural) relations*. Thus, the idea of a determinist relationship between structure and performance falters, producing the need to inquire into other kinds of relations that take into account the criticisms held against objectivism in performance by contemporary musicology, apart from explaining those contextual relations and the way in which each action affects the contextual meaning.

Secondly, from a reception perspective, those studies also showed the power of the generative paradigm to partially explain the results. According to the classic communicational scheme, listeners are the last link in a chain. In this sense, one expects them to display some behaviour that may allow inferring the way in which they understand the music. The segmentation task seemed to be closer to the understanding of structural rather than microstructural aspects. Thus, the idea that performance can elicit different structural representations only found weak evidence. The data gathered here could not totally explain the role of prolongation in the listener's *representational* experience. Music meaning in affective, conceptual, anthropomorphic and kinetic terms would also seem to be highly personal and unrelated to performative interventions concerning the piece's prolongational structure. Nevertheless, it would seem that performance certainly impacts on selected aspects of the time experience. This was the path followed from chapter 7 in this thesis.

11.3 A twist in perspective

The contradiction between the idiographic tendency that encourages musicological concerns and the nomothetic demand that the psychological interest yearns for, threatened to lead us towards epistemological scepticism. Perhaps that same scepticism led Adorno (1958) to withdraw from any psychological approach to music. Nevertheless, this contradiction is not far from certain common procedures that performers employ in musical praxis: music performance itself is contradictory in the same sense. When performers play scales and arpeggios in order to develop their technique, they are implicitly adopting a nomothetic, generalized perspective of the technical resources. But at the same time they know that each scale or arpeggio will be settled according to the context in which it appears, the circumstances in which they must be played, etc. In short, they know that they have to solve each obstacle in a particular way. As performers, they have learned to weigh the general and the particular in the conformation of their own thought.

The current scene also, with such a demanding and complex market for the performative arts, in which the demand for originality on the one hand, and a delicate balance between indulging and provoking the audience on the other, setting the trend in which there are no trends, has forced the performer to communicate with listeners beyond considering them as a mere depository of their message.

Against this background, the toughest demand is placed on the performer-*creator* as opposed to performer–*recreator*. This fact led to the reconsideration of the relation between performance and composition in order to explore further a possible role for the prolongational structure (of the composition) in performance. The idea is that the composition is *a material that* performers have in order *to construct* their work. It is used concurrently with other materials in a *dialectical* relationship. The notion of *composition as material* replaces the classic concept of version by that of *transposition*. In this way, the problem may be seen from another perspective.

Firstly, this new perspective incorporates non-sound elements into communication, and assigns an important role in music performances to both gestural and bodily components as well as the context of performance.

Secondly, for a performer considered as a *maker* in a context in which meaning is the result of a process, studying communication following the classic *information transmission* paradigm proved not to be useful. Thus, the communication paradigm as dance opened a promissory perspective. At the same time, the study of this communicational paradigm guided the search for indispensable ontogenetic and phylogenetic aspects to understand communication in psychological terms.

The results of the experiments reported in chapters 5 and 6 demonstrate that a very important aspect of the performance experience (both for performers and listeners) is related to the problems of the performance's temporal configuration.

A structuralist perspective of music psychology, as focused on the description of *stimuli* as a basis to account for *processes* in which an *objective structure* of the stimulus is the content of the experience, appeared to be insufficient for understanding the role of prolongation. On the contrary, the results of those experiments seemed to follow Ricouer in showing that the work structurally conforms with the purpose of offering the listener "*a set of temporal experiences to be shared*" (Ricouer 1984, p. 536). Therefore, new modes of thinking the content of communication were explored, in which the temporal configuration occupies a more important place. Thus the problem of the narrativity of performance was approached, since narrative understanding is achieved from the time configuration in the musical experience (Ricoeur 1985). *Narrative* understanding has to do with the configuration of a *temporal whole* rather than as a *logical whole.*

In addition, within the metaphor of dance as a communicational model, the temporal configuration is central. For that reason, musical performance was reasonably viewed as an intersubjective experience in which the crossmodal temporal experience is the basis for the mutuality bond between the partakers of such experience. Considering communication from the second person's point of view, the intersubjective approach is advantageous since the semantic problem is removed from the debate. In this frame, morphological and syntactic aspects as the contents of communication are enough. It is thus possible to think about a kind of communication that, as in early childhood, is not *subordinated* to language. The difference between verbal and musical communication (or, more broadly, artistic communication) is the fact that between the *maker* and the receiver there is no message but an object for contemplation (Deliège 2000).

The empirical research of the chapter 10 of this thesis was undertaken in this context. A composition was taken and certain of its structural aspects (particularly part of its prolongational structure and certain interesting aspects of the motivic and formal articulation at the surface level) were analysed together with other contextual aspects. The analysis of a very unusual transposition of that composition (that of Polansky in his film, *The Pianist*) served to show the very concept of transposition and the dialectic relation between structure and realization (or between composition and performance). At the same time, different resources put into play for the temporal configuration could be observed. The same idea guided the analysis of the 5 performances seen as transpositions. One of them, Kissin's performance, clearly seemed to take part of the prolongational structure as one of the materials for its realization. The affinity between Polansky's and Kissin's transpositions consisted of (among other things) the use of the prolongational structure as crucial material in the configuration of the work's time. This affinity seemed to be perceived by the listeners when judging the similarity between the film's scene and the piano performances.

There are three important aspects of this experience that allow one to discuss some of the proposed theoretical questions. The first is the notion of composition as *material* and its realization from the *dialectic of the materials*. This notion leads to another twist in current performance theory, according to which any ontological distinction between a work's different forms of existence does not exist, because there exists no original (Cook 2003). On the contrary, from this perspective they are not *different forms of existence* but different works, with their own tensions, created from certain common materials. Since always there are other different involved materials, the *dialectical* synthesis is always different. For that reason, they are understood as different works. The idea that the concept of *material* allows the establishment of different genitive relationships between composition and performance was viewed in chapter 7. This relationship, being dialectical, is not opposed to the most conspicuous performative issues. As seen in chapter 3 and reedited throughout the rest of the thesis, many performative problems have to do with *involving the body*. For Nick Kaye (mentioned by Cook 2003 p.209) that *involving of the body* appears as a *place of resistance to the text*, as an *opposition to the desire for depth*. From our point of view, the body does not annul depth; instead, this *resistance* is thought to be manifested in tensions between the bodily and the desire for depth dialectically solved when such a *desire* is one of the resources used in the narrative's construction. Kissin and Polansky did that. But that dialectic synthesis implies avoiding the linear resolution of *playing from the middleground*, which according to Cook is the Schenkerian rule for performance, because it is not about producing a "*more or less transparent revelation of the underlying structure*" (Cook 2003, p. 209). There is no reason to think that Polansky can be interested in that. But, in the same way, it is possible to argue that Kissin is also indifferent to it. What they do is use the *middleground* in order to create their own speech and imagine their own story.

This leads to the second point, related to the creation of the story. The results of the empirical research presented in chapter 10 advocate that performance may be understood as a *way of narrating* music. Following Bruner (1986) (who, in turn, follows Iser and Todorov) it is possible to think that performance offers the listener three key aspects for producing meaning guided by the composition: (i) *presupposition*, according to which the performer's actions are taken as implicit meanings; (ii) *subjectivation*, such that the performance emerges not as a truth of the reality but as point of view on that reality; and (iii) *multiple perspective*, in that the facts can be considered from manifold perspectives (and therefore performed in multiple ways). According to Bruner, these features *subjunctivize* reality (subjunctive in the sense of possibility, desire and unconsummated reality). The performer (as narrator) takes reality (in this case the work's musical structure that is a part of that reality since there are many other materials in play) and transforms it, or *subjunctivizes* it. That is to say, those transformations cause a non-*indicative* (explicit) reality but a *subjunctive* (possible) one. Listeners *are aware* of the transformations and assign meaning to them, capturing and using them, and also transforming them into their own transformations according to their own cultural perspective of that reality. In this thesis' experiment, it was seen that throughout this entire process of meaning, the temporal organization, as an important transformation, seems to be central. The performer and the listener take control of this subjunctive reality. It is not a reality *imposed* from the outside, but is *created* according to its own necessities arising from the balance between *outside* and *inside* (following Goehr and the notion of playing *from the inside or outside* (1992), this balance could also be understood as a dynamic balance between the supportive and expressive functions as seen in chapter 2.)

This idea leads to the third aspect, which is related to the way in which this temporality is shaped and shared in the intersubjective experience, namely the crossmodal process. The experience reported in chapter 10 concerns Cook's (1990) distinction between musical and musicological listening, and its relation with crossmodality. If the directions of the listening test had been oriented to attending to the particularities of the performance while observing the video, a *musicological* listening of the sound track would have prevailed. However, a more open, "neutral" direction allowed a *musical* listening focused on the time configuration. This "neutrality" solved the crucial problem in the chapter 6 experiments concerning the types of representations that prolongation could provoke – remembering that that issue lead to designing an experiment according to four categories of adjectives and to realize a content analysis according to those categories, assuming they could capture the kinds of representations emerging from the listening. When abandoning the representational problem, proposing a *musical* listening as opposed to a *musicological* one, the methodological problem was solved and a psychological explanation of the prolongation could be defined as a resource for the imaginative activity that gives rise to the configuration of time in narration. *Musical* listening has an available place for the crossmodal experience, whereas the musicological one is narrower in this sense. If listeners codify a message in semantic terms (Sloboda 1985) this means that when receiving certain information, it is processed and stored according to the meaning it has for the person who perceives it. Thus, the musical experience is transferred to other representational modes and often characterized in metaphoric terms, extremely affected by crossmodal considerations. This is what Reybrouck (2003) calls *semanticity strategies,* which are used by the listener to give semantic weight to the sound input (in this case certain performative characteristics, rubato, dynamics, etc.). Thus, the information listened to during the filmic sequence was processed and stored in semantic terms. Therefore, the listeners remembered *the meaning* of the sequence and soon matched it up with the *semantically* more compatible sound sequence (the piano performance). When remembering, the listeners do not reconstruct the auditory sequence but its *meaning.* For this, they are able to add or to remove attributes from their representation. Thus, the expressive attributes tend *to complete* the gaps in meaning left when the more complex significant attributes of the filmic sequence disappeared.

As we have seen, narrating implies breaking away from the real time of the narrated events. This implies creating a new temporal logic. It is possible to think that new temporal logics provide new *narrative* elements to the expressive performance, and this is the case with Kissin's performance. The listener is well-disposed to understand those new temporal logics (Ricoeur 1985). Thus, expressive music performance has a clear fictional function because it breaks with real time (the time of the events in the world), the time fastened to the structure, and introduces a time that belongs to the performance in particular, making use of other interactive timing mechanisms. Those mechanisms are the ones that, in particular, remain during the ontogenesis of fictional capacities (Shifres and Español 2004; chapter 8). The use of a given timing mechanism instead of another one would affect the temporal experience.

In narrative, the shaping of the plot has to do with enriching narrative time. That enriching takes place in the split between the narrating time and the narrated time. The conjunction/disjunction of these two times, in other words, its tensions, *alignments and misalignments, synchronies and asynchronies*, project a fictional experience of time. We have seen that in music performance it is also possible to split both times. When playing a rhythmical pattern, for example, the temporal structure of that pattern constitutes the narrated time, whereas the real time of the performance is the narrating time, on which the performer has the power to operate. This produces *conjunction/disjunction, adjustment/maladjustment* or *synchrony/asynchrony* tensions that project a temporal experience that is not real but fictional (Ricoeur 1985). It is fictional because it does not obey chronological time. The results of the intuitive time estimation test of Chopin's Prelude in b minor presented in chapter 6 show that the experience of time depends not only on the macro structural characteristics of the musical work, but also on the tensions that take place in the flow of time between the different micro temporal components.

Following Ricouer (1984; p. 494), there is a phenomenological distinction between the fact of playing and what it is played: "*any performance is playing something that is not the performance itself*". The possibility of distinguishing between the time of that which is played and the time used in playing it, emerges from this phenomenological difference.

11.4 Rubato's expressive power

Interestingly, the expressive attribute with the most power to provoke the above discussed meaning seems to be timing. In this section some emergent points about the issues approached in this thesis that allow the formulation of a hypothesis about the triple genesis of this expressive resource will be discussed.

11.4.1 The *affective* processing of time

Until now, cognitive science has not been able to explain our experience of time (and, therefore, of time in music) beyond explaining some aspects of the demarcation of time subordinated to the attention, memory and expectation processes according to predetermined temporal windows. Nevertheless, the experience of time (and, therefore, the experience of time in music) includes more than this demarcation and its content depends on the way in which time is structured within it (Reybrouck 2004, Ricouer 1985). It was also seen (chapter 8) that the time configuration is crucial in the emotional and communicational world. In addition, certain important abilities in that emotional and communicational world (such as the synchronization of action with another person) directly depend on the time configuration, eliciting, for example, different behavioural interactive time mechanisms (see p. 269). Many of the problems of current performances of 19th century music for solo instruments are precisely these time problems.

But, on the other hand, cognitive science has made a most important contribution to the study of these problems by making operative the notion of expression through the concept of expressive deviation (chapter 4). This notion is vital to an understanding of the way in which both performers and listeners operate with time in expressive performance. As a starting point, it is possible to consider that human beings are neurologically and psychologically prepared to understand the subtle temporal variations that separate the time of the world, known time, the predictably structured time from the time of the particular experience, the time of the musical performance (Wittmann and Pöppel 1999/2000, Trevarthen 1999/2000). But, in addition, previous experiences (phylogenetically and ontogenetically speaking) have prepared humans to give meaning to those temporal contrasts in emotional terms. In other words, those temporal structures are part both of the emotional interchanges with the world and of the possibility of sharing that time with other people (involving "sharing an action", "joint acting") during the musical experience (Shifres 2007). This preparation is very simple. It is related to an evolutionary line in interactive behavioural timing mechanisms that goes from a *reaction time* mechanism, according to which people act in response to another's action, towards *predictive* mechanisms (Merker 2002a). The first of these mechanisms is a mechanism by *familiarity*, according to which human beings act by virtue of the previous knowledge they have of the other person's typical behavioural patterns. The second is a mechanism based on an *underlying pulse,* according to which human beings act by adhering to a metric structure that is extrinsic to those in interaction. When a person listens to metric music he is, in a certain way, adhering to the underlying pulse of the performance. The temporal experience is strongly related to such a metric structure, and by it, it is possible to imagine what has already happened, process what is happening and anticipate what is going to happen.

The disruption of the metric constraints implied in the use of rubato (expressive timing) forces the listener to engage more *primitive* interactive behavioural timing mechanisms (Shifres 2006). In particular, the interactive mechanism of *reaction time* is important here. This mechanism not only refers to early interactive experiences but also allows outlining an *activation profile* of the other's behaviour in time (*vitality affects*) that can convey dynamic emotional information. Thus, music performance is structurally shaped with the purpose of offering the listener a set of temporal experiences "to share". In this way, the performance itself defines an intentionality of shared experiences, being just like early intersubjective experiences in that they are temporally organized. Thus rubato contributes to a unified emotional experience of time in music performance.

Although it would seem that no interactive behaviour exists on the part of the listener, it is important to consider that the key to the consequences of such subtle temporal microvariations on the successful understanding of the artwork lies in the particular way of experiencing them. According to Clarke (1998), music performance has a particularly somatic character. Therefore, it is possible to hypothesize that its communication will involve some somatic aspects. When understanding the somatic nature of music performance "*it may be possible to come to a better understanding of why it is that the apparently insignificant transformations that the performer brings to a piece of music achieve such important qualitative changes*" (Clarke 1998 p. 89) in the listener. This is related to the process that some researchers term *kinetic perception* (Keil, in Clayton *et al.* 2004), by which both the perceptions and expectations governing the actions of a person who is (only) listening (neither playing, nor speaking, nor producing sounds) are coordinated by what he is listening to.

11.4.2 Rubato as a culture's expression

To investigate the ontogenetic and phylogenetic precursors of rubato does not imply a presumption of universality. It is almost axiomatic that rubato as an expressive resource is a cultural construction belonging to a very specific musical context. The modes of musical expression are part of stylistic choices (Blanco 2002, Hatten 2001). Tonal musical culture selected and developed this resource from many other available varieties of expressive means to develop. The historical genesis of such choices could be hypothesized.

Verbal language and movement (gesture and dance) are two cognitive domains intersecting with music in relation to the organization of the temporal and sound continuums. However, Western Art Music gave rise to the development of musical manifestations that clearly distanced themselves – at least in an explicit way- from both language and movement. Probably, in order to achieve this, music needed to make both time and frequency, two continuous dimensions, discrete (Merker 2002b). In this way, WAM can be understood, as Merker (2002b) proposed, as a *self-diversifying* system (Abler 1989). A *self-diversifying* system presents *discrete* elements belonging to at least one dimension. The discrete units are atomic, it is not possible to mix them, and they can only be combined. The idea is that a small number of discrete units can give rise to infinite combinations, providing an enormously diversifying power to the system. Natural languages and genetics are known as typical examples of self-diversifying systems. Merker argues that it is possible to understand music as such since it presents at least one discretised dimension – frequency and/or time.

The use of rubato and other *transgression* means of rigid metric patterns are not contrary to this affirmation since the effect of these resources depends exactly on the local contrasts that such resources accomplish with the established discrete proportional units. In other words, without the possibility of adhering to an underlying pulse (as a substrate of the discrete variable), understanding rubato as an expressive resource would be impossible. Other structural dimensions of music (for example the dynamic dimension) do not appear as discrete. Sound intensities (dynamics) are used in the same way, as an expressive dimension, both in music and in language and therefore do not define a sound phenomenon *per se* as music. For that reason one says that such dimensions do not define a characterization of music.

The co-action of both discretised dimensions (frequency and time) locates the historiogenesis of a particular musical practice: the *common practice* - according to the English speaking musicological description. This also agrees with the moment in which the proportional system of music writing was enforced in a more normative way on the compositional process (due to the definitive elimination of the linguistic element – text – from music) and when the writing system is filled with “black lists of liberties” (Deliège 2000). During the period of the *common practice*, the temporal dimension, the performance timing, became the main expressive resource in musical communication. In this context, the continuous dimensions reinforced the expressive function of those temporal domains (now absent) that showed intersecting areas with music (language and movement). For example, the Chopinesque rubato emerged clearly from a style that owes a great deal to the operatic Italian style, but in the absence of text. In this way, rubato appears as a remnant of the lost verbal component’s use of time. Therefore, two modalities of time remain in those expressive practices, a discrete time and a continuous time. The result is a disruption of the metric constraint that depends on the discretisation producing that *expressive effect*, because it gives rise to a confrontation between the time of the musical events in the world and the time of the musical experience in the expressive music performance. On this matter, the evidence gathered in the experiment presented in chapter 10 showed that rubato contributes to the meaning of music in absence of other referential attributes (i.e. text, image, etc.)

The uncoupling of language from music would mark a historiogenetic landmark in the expression of instrumental practice in Western musical culture. Those less specific characteristics (that music shares with other domains, like language and movement) are the key to considering a performance as expressive, since they are generally more universal in communicating expressive content. Put more simply, rubato serves to communicate *feelings* when speaking, doing music, moving, etc. Besides, they are present from an early stage in our affective life.

None of this means that *every* expressive resource in music works in this way. On the contrary, it is simply a hypothesis about the way in which western musical culture assigns expressive meaning to music performance. This way has to do with a particular use of time that human beings have developed throughout the phylogenesis for communication in general. This special use of time was not kept by other musical cultures because they have either not needed it or did not intend to communicate affection or because they continue adhered to other domains, which make use of those resources (for example language or movement, as in song and dance). During the historiogenesis, selective, elaborative and transmission processes take place linked to the ways of discriminating, learning, memorizing and reproducing music that are proper to each culture. As music is a self-diversifying system, this gives rise to immense dispersion throughout the historical processes.

11.4.3 The tension between the world’s time and the artwork’s time

The time of the musical events in the world is marked in the listener’s experience by a set of more or less standardised musical structures for a given musical language. For example, in the classical style one can predetermine temporal cycles at the level of the musical phrase (for example, symmetrical phrases of 4 measures), of the metre (for example, the periodicity of accents), and of the pulse (for example, the regular recurrence of the beat) among others. The events of the piece in music performance, on the contrary, are determined by their performance time. In other words, listeners contrast the time of the performance with the time *of their life experiences*, the structural time. And the narrative experience emerges from that tension.

In other words, the notion of narration emerges from the conflict between the pre-existing temporal configuration (in this case the *composition's* time configuration, representing the time of the world) and the "*re-figuration of the temporal experience by this constructed time*" (Ricouer 1985, p. 115) (in this case the re-figuration of the listener's time experience, representing what Ricouer denominates the time of the work). In this way, the temporal conflict introduced by rubato reinstates the narrative trait that music lost in becoming independent from language.

In a Kantian sense, imagination generates a connective structure by which one has a coherent and unified experience throughout time. The narrative construction which the performer can realize from the composition, re-configuring its time, adds content to the music. Thus, rubato contributes to a unified narrative experience of time in music performance and, therefore, to the meaning of music. The great challenge of cognitive science regarding the *time dimension* is how to go from the notion of a succession of discrete units to a *relational continuity*, a whole that is more than a mere succession (Reybrouck 2004). This is a turning point in the current epistemological debate both in musicology and in music psychology. Classical cognitive science tends more towards the first. The culturalist perspective is more concerned with the second. In between them, music performance appears as a dynamic field in which both approaches may provide important contributions.

11.5 Final remarks

Finally, a fair characterization of the intended contribution of this thesis is necessary in order to avoid false expectations and exaggerated conclusions. Probably, both the musicological and psychological perspectives have been left incomplete, still awaiting too many answers. But this is so because here the focus on the specific problems of music performance viewed from music performance itself is completed best. In other words, the questions asked have found some answers that are possibly more useful to the artist than to the researcher. In this sense, I must be frank.

At the beginning of this investigation, the topic was clearly a problem of the cognitive psychology of music: the question of *prolongation's cognitive reality*; I looked for signs of *cognitive reality* in performance. Nevertheless, in strict terms, this problem is far from my current concerns; it is a problem of the modernity related to the positivist paradigm in the field of music performance. Throughout this thesis, I have changed the focus in order to obtain a broader understanding of the role that prolongational structure, as a strong idea derived from music theory, may have in the peculiar communication that takes place when playing music with and for another. The interest then changed towards understanding the potential that the concept of prolongation had, modelled particularly from the voice leading perspective, for *imagining* the performative artwork, giving rise, in performance, to a particular temporal configuration, a key aspect of its communication. In other words, I simply tried to analyse whether prolongation, as an idea, may give way to a particular temporal configuration in performance and whether in sharing this time a new, original and distinctive experience may emerge between performers and listeners. The evidence of the crossmodal experience of music (both in performance and listening) supports the argument that in shared musical experiences people do not share notes but a kind of time configuration shaped by the notes, as well as many other elements. The strength of the established bond in that communication is due to that particular, unique and unrepeatable time configuration. Undoubtedly, that was the strength of the bond I felt with my friends that time, when playing Schumann's *Ich denke dein* together.

In an epistemology based on the notion of music as performance, the place of music analysis and the analytical models cannot be the same as that occupied in a musicology concerned with scores. The analytical models cannot be taken as the models of music, and they will have to be considered in terms of their relevance to some experiential aspect. In this case, the Schenkerian model's value cannot be evaluated outside this epistemology. According to Cook (1989): *"If a Freudian explanation acquires its validity through being accepted by the patient, a Schenkerian explanation is validated when its reader accepts it as a satisfying account of the music in question"* (p. 128). In this way, I could add here that in accepting this explanation, the reader can find a pillar on which he or she *can* imaginatively build an interpretation (which may be materialized in a performance) according to a particular narrative that gives rise to a particular narration time. Thus, in the context of carrying out a performance, musical analysis is involved in the handling of the material. From this perspective and contrarily to what happens in the frame of a strictly musicological epistemology, the material cannot really be questioned in terms of truth but rather in terms of effectiveness, coherence, potentiality, beauty, anything but truth and falseness. Undoubtedly, there was no problem of truth in that memorable Russian pianist's performance of the Chopin etude. There were issues of beauty, coherence and verisimilitude. People who thought of this performance in terms of truth left the concert hall that night in an outrage: "Chopin *must not be played* like that!"; a typical objectivist expression.

In that sense, Schenkerian theory offers a flexible frame *to imagine* music. This is probably what made it so attractive for studies in music performance, because, in spite of its rhetoric, it represents a way of understanding without prescribing. It is a kind of "*to open the door to go out and play*". Other more normative theories (such as cognitively oriented theories, *GTTM* and *TTPS* in particular) tend to reduce *the game* (the possibility of creating from imagination within the framework given by the theoretical configuration) with their own regulated procedure.

This flexibility also allows for the notion of depth proposed by the theory to adapt itself to the historical necessities of depth exhibited by different performative traditions. Romantic and modern performers share the idea that there is something deep to be discovered. It was said here that this is compatible with the notion of depth of the musical structure and with the particular idea of performance value both perspectives use: the idea that what is deep is valuable. On the contrary, from a postmodern perspective the performer does not discover but create. That which is deep takes part in the performance's creation, and therefore, does not contradict what is *superficial*; they are necessarily integrated in the work's creative process. The opposition between imagining the deep structural levels and the necessity of *committing oneself physically* on the surface level is the dynamic on which the performative work is created. For some scholars this dynamic is *naturally dramatic*, because it can integrate the content to be narrated with the physical and emotional dynamics of the performance (Schmalfeldt 1985).

*****

At the end of this entire journey I cannot avoid returning to that spring afternoon, when an incredibly fine thematic counterpoint emerged at the end of the Chopin etude that I believed familiar, but that at that moment appeared before me as though unheard-of. And that scene appears again in my memory in virtue of a mistake I made when writing the introduction to this work. When making the graph of figure 1.1 (p. 5) I wrote what appears in figure 11.1.

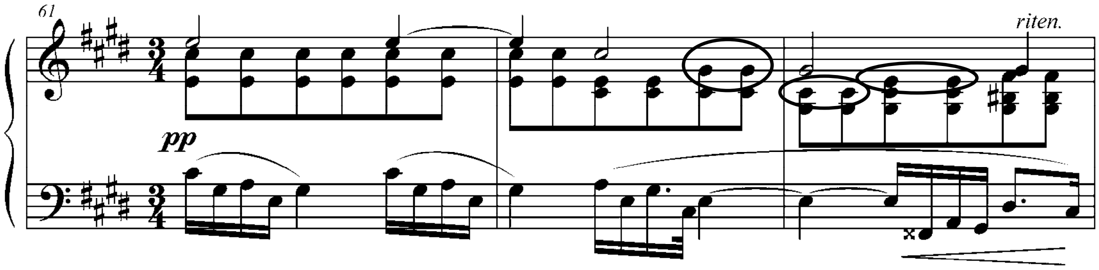

Figure 11.1. *Chopin's etude in C sharp minor*. bars 60-63

Of course, when I sat at the piano and tried to play that idea, nothing that had to do with that really aesthetic experience could be heard. Then I noticed my mistake and corrected it. Nevertheless, it was not a naïve mistake. I let myself be carried away by the logic of the music analysis that marked my theoretical musical formation, by the logic of objectivist musicology. The identified relation is logical, objective, but does not have anything to do with the beauty of the counterpoint my teacher had shown me. In turn, that song that had been uncovered, the one of notes g^4#-c^4#-e^4 at measure 63, does not resist any logical argument. It is integrated by notes that come from different voices. For this reason each one appears logically linked to different structures. My teacher had not analysed the piece in logical terms in order to play what she played. She *created* that dialogue that Chopin had not (or he had at least not shown explicitly). And she created it surpassing issues that seemed to have been imposed by Chopin: the metric structure, the linearity of the voices, etc. Nevertheless, my teacher did not create anything. Chopin had left the materials of his creation there, and she took them and just as the sculptor models the face of an angel from the humidity of clay, she created that dialogue, that tired and desolate imitation, she *modelled it* with those materials. She did not interpret what Chopin had written; she used what he had written to imagine her own piece. She was able to transcend the performance as an interpretative act to restore it as an imaginative act. Like the young lady from San Nicolás, she was able to "*open the door to go out and play*."

Appendix I: Prolongation in music theory

I.1 Prolongation and voice leading

I.1.1 The original programme

In 1922, in his work *Kontrapunkt*, Heinrich Schenker proposed the development of the *Fernhören* or long distance listening: in counterpoint, "*the harmony of the strong beat is as if it were still present in the weak beat, as if it would continue sounding*" (quoted by Martínez 1999, p. 47). From this point of view comes the idea that dissonance prolongs and emphasizes consonance, producing an increase in the activity of consonance: a non-acoustically present musical event however remains active. In this way, Schenker started to formalize his idea of prolongation in common with his development of the linear concept of music. Already in his previous works (*Harmonielehre*; *Kontrapunkt I*), Schenker had explained the structural hierarchy of chords as a result of the linear elaboration: a chord arising from the mode that another chord extends in time until a new triad of similar functional definition is established, is understood as of lower hierarchy, and is simply considered as the result of the logical movement of the voices to reach the new triad (Horton 1998). The voice leading develops the scale degrees and generates the triads, which for that reason are considered of lower structural status and of contrapuntal origin. It would seem as if in this stage of his production, Schenker was worried about differentiating what alludes to harmony - as an abstraction - from what occurs from the mode in which the voices are led in a real manner. Notwithstanding, this distinction is just accomplished in Schenker's older works, when he developed a key concept: the *linear progressions*. A linear progression is an a priori abstract configuration (although sometimes it can explicitly be present in the musical surface) that consists of a scalar movement, generally downward, frequently filling the intervals within the triad (octave, fifth or third) (Figure I.1). These linear progressions are abstractions of the musical surface that (i) reduce variability in the melodic path to a single direction (as we said, generally descendent), and (ii) define the hierarchy of the notes occupying the scale degrees within this plot. Linear progressions are the most abstract expression of tonal music movement and are responsible for tonal coherence in the musical piece.

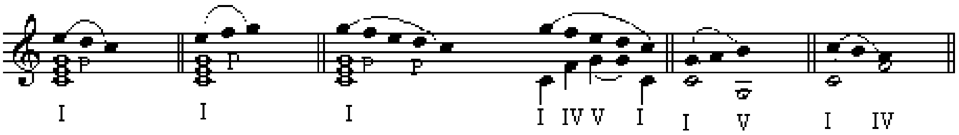

Figure I.1. *Characteristic linear progressions.(From Cadwallader and Gagné, 1998, p.79)*

For Schenker, a linear progression is a mode of aesthetic assessment; it is the expression of general musical coherence reached as a result of a dialectic relationship between contrasting elements (steps vs. chordal intervals; consonance vs. dissonance, etc).

Together with its contribution to the psychologization of the aesthetic field, the linear progression prepares the scenery for the mental operations responsible for the experience of the non adjacent links that guarantee the coherence of the piece in psychological terms: *mental retention* (see chapter 3). While mentally retaining the initial sound of the linear progression, a tension that reinforces and intensifies the connection is established (Schenker 1935; Martínez 1999).

Accordingly, the notion of prolongation can be analysed from three different points of view, which in Schenker's work are permanently associated: as a technique (both analytic and compositional), as an aesthetic value, and as a psychological principle. In regard to the first dimension, Schenker's mature works further developed the concept of prolongation, redefining the harmony-counterpoint relationship as two faces of the same coin that engender the musical structure (Horton 1998). Harmony is essentially understood in terms of the external voice leading (bass and soprano), which at the same time is oriented by that harmony. During this period, Schenker refined the idea of *reduction* as an analytical device based on the scrutiny of the effects of voice leading. From here on, he formulated a system of *structural levels* wherein the hierarchy of notes, already outlined in his previous works, is better distinguished. The construction of structural levels led him to apply the idea of hierarchy of notes, and the concept of prolongation itself, to a high degree in his work. It is interesting to observe that along with this extension of the hierarchy to the large scale of the work, hierarchical distinctions are progressively more comprehended in linear terms (counterpoint). Counterpoint is what allowed Schenker to understand and represent the linear processes in terms of which he could define the tonal role of each of the notes, and therefore its structural hierarchy. For that reason some authors see counterpoint itself as a representational device (Blasius 1996) that embodies the *Auskomponierung* process (composition and elaboration).

Prolongation as an effect is a powerful tool for the characterization of successive structural levels: by definition the most abstract levels are the least prolonged ones. On the other hand, the musical surface is the result of consecutive *prolongational* elaborations of those more abstract levels. In this way, prolongation is for Schenker a technique that allows the derivation from the *Ursatz* - the most abstract and reduced level of the structure - of consecutive levels, progressively more concrete and prolonged. According to Schachter (1999), the greatest formalization of these techniques can be found in the description Schenker makes of middleground in the second part of *Der Freie Satz*. Even at risk of being extensive in the quotation, it is interesting to show the summary Schachter realizes about these techniques:

> *"1. Prolongations of the bass including space-filling motions between I and the V above it and the appearance of two bass arpeggios under a Fundamental Line.*
>
> *2. Divisions of the Fundamental Structure. Schenker discusses two possibilities: interruption in the case of lines from 3 and 5, and the division of 8-lines into 8-5, 5-1.*
>
> *3. Expansions and modifications of the Fundamental Line through modal mixture, the use of b2 (moll second), upper neighbor note, substitution (e.g. of 7 for 2), linear progressions, and arpeggiations.*
>
> *4. The panoply of voice-leading categories that Schenker devised to account for connections between voices and for manipulations of register, among these such well-known techniques as Übergreifem Untergreifen, Ausfaltung, and Koppelung (translated here as "reaching-over," "motion from the inner voice," "unfolding," and "coupling")."*
>
> *It is important to remember that all of this material can also appear at later levels; none of it is restricted to the first (…) Schenker does not offer any criteria for assigning the proper level to these prolongations. The omission is probably justified by the difficulty or even impossibility of discussing this issue in a general way – the relationships between levels will vary form piece to piece"* (Schachter 1999; p.195)

This summary demonstrates Schachter's preoccupation (more than Schenker's) for formalizing the techniques, a concern more related to the 60's English speaking musicology field than to the 30's German musicology. At the same time, he shows that the generalization of the prolongational techniques over all the structural levels is another requirement of the derivations that Schenker's ideas had more in the English speaking than in the original enunciation of the theory. This quote can be contrasted with the summary Schenker himself made in 1925 in *Das Meisterwerk in der Musik* about the role prolongation plays in his analytic system, its origin in counterpoint, its epistemological status and its aesthetic implications:

> *"The natural idea of the triad, the artistic idea of composing out this sonority, the perfection achieved by transforming one sonority into many by means of voice-lea ding prolongations, the creation of form as a consequence of the Urlinie: all this goes a masterwork. Idea, perfection, masterwork are one concept: by achieving perfection, the masterwork partakes of the eternal life of the idea, it is elevated beyond all ages, it becomes timeless.*
>
> *Perfection is true life, a true eternity: in opposition to it stands non-perfection, no-fulfillment as an incapacity for life, ultimately as stagnation and death. However energetically fervently the non-fulfillers may set about their toil and strife, they do no partake of the eternal life of the idea: the withdraw from it, form themselves and from others.*
>
> *Merely to share in the masterwork is a truer life than to waste away in non-fulfillment. In this sense, the masterwork, is the only path for those who have not had the calling. Today more than ever, in the darkness of stagnation, it is the only possible way out of the chaos and confusion, the only light that points towards the future*. (Schenker 1925; p. I)

In the Schenkerian system, prolongation is therefore much more than a compositional technique, an analytical device, or a structural component. With regard to this, the first important implication of the prolongation concept for contemporary musicology is the revalorization of the relationship between linear development of the voice and the vertical consonance principle. As Cook (1990) stated, the Schenkerian view is sometimes seen as a revelation of the vocal sensibility of tonal western composers. This sensibility, which appears in the tendency of the voice to unfold, through a joint and directed move, within a relatively small tessitura, would have transferred from surface levels - in pre-tonal music- to the *imaginative* levels of large scale musical organization in tonal music (Cook 1990; p.98). But moreover, as it is possible to infer from the previous quote, the consequences of the prolongation concept are not restricted to the fields of music analysis and composition; it influences the evolution of aesthetic ideas and consequently - and of higher relevance here - penetrates the field of performance and music interpretation.

I.1.2 The Schenkerian programme in North America

Some of Schenker's followers in the United States tried to insert his ideas in a context where the harmonic component of tonal music structure was the main academic concern. In this way they carried out a revision of traditional harmonic techniques from a linear point of view. Salzer (1962), in particular, elaborated his *Structural Hearing* theory as a pedagogical proposal relating the Schenkerian idea of prolongation to academic practice of harmony and ear training. From a theoretical point of view this approach can simply be understood as a strategy to place once again counterpoint at the centre of discussion, where harmony had gained supremacy. However, the understanding of prolongation from the *prolonged chord* notion allowed him to expand the concept of linearity itself and to incorporate a vertical dimension to the problem of music directionality. Thus, prolongation is not only the elaboration of lines but also the elaboration of harmonies.

Later, Salzer and Schalter (1969) treated the bi-dimensional (harmony and counterpoint) prolongation idea as a whole. An example of this endeavour is the idea of the *applied dominant*. The applied dominant prolongs the degree to which it has been applied, for which the prolongational function of the chord is defined by its harmonic functionality. This bi-dimension of the prolongation concept reaches a clear expression in the work of Forte and Gilbert (1982), in which the harmonic prolongation of a chord defines and simultaneously is defined - dialectically - by melodic prolongation. These authors mention that harmonic prolongation is easier to understand because it is directly related to the concept of stability in terms of consonance-dissonance.

From the aesthetic perspective the intention of extending the notion of prolongation that Schenker had delineated beyond the *natural* borders of tonality (for example see Salzer 1962, Strauss 1987) implies abandoning the aesthetic dogma of the theory. However, parallel to this withdrawal - probably due to pragmatic reasons and ideological motivations - an intensification of the psychological side of theory is produced. Therefore, it is adapted to the post-behaviourist psychology that monopolized the English speaking world since the 1960s.

In spite of its strong cognitive appeal, the linear nature of the Schenkerian proposal, in other words the idea of prolongational structure derived from the voice leading, was clearly approached in recent times from a cognitively-oriented proposal. Larson (1997) presented an explanation of cognitively oriented prolongation based on critical positions of the objectivism sustained by classical cognitive science (see chapter 2 –pp. 38 and ff.-, and chapter 3-pp.65 and ff.- for a discussion about the cognitive appeal of theory). More than basing his ideas on musicological and traditional psychological concepts (like for example those of Forte and Gilbert (1982), who based melodic prolongation on melodic diminution

- a concept coming from the ancient techniques of continuo bass and *partimento* from the 17th century (Bustamante 2002) - and harmonic prolongation on the concept of *consonance*) he derives his ideas from the philosophy of *experiential realism* (Lakoff and Johnson 1980, Lakoff 1987, Johnson 1987). According to them, he attributes the origin of prolongation to the action of three *Musical Forces*: (i) *Gravity,* the tendency of an unstable note to descend, (ii) *Magnetism,* the tendency of an unstable note to move towards the nearest stable note, and (iii) *Inertia*, the tendency of a musical pattern to continue in the same way. These forces are defined by a certain stylistic context and frequently operate performing contradictory tendencies. The *contextual stability* of a note arises from the tensions generated by this contradiction. This concept opposes the notion of *inherent stability,* which is linked to the idea of stability that the objectivist musicological tradition has employed, and is related to the classical notions of absolute consonance of chords and notes. In contrast, a note is *contextually stable* when it is not possible to aurally perceive (Larson uses the word *audiate* analogous to *visualize*) a tendency of such note to move towards another note from the immediate context. For example in figure 3.1.a (p. 53), on the first a^4 of bar 1, force of gravity would make that note tend to move to g^4. However, *inertia* would make it to tend towards b^4. As a result of the contradiction between these two forces tendency of movement is counterbalanced. According to *magnetism* a^4 is stable since it is equidistant both to g^4 and b^4. In view of that, a^4 is seen as locally stable. In such circumstances, the musical forces do not impulse the note towards any direction and the particular note assumes a more structural role: its trace keeps on. So, prolongation occurs since the beginning of the trace, and remains until the trace of that note is shifted by the trace of a new melodically more stable note. In the above mentioned example this happens in g^4 of bar 2. Only at this point does *progression* take place; as the opposite of prolongation, progression is the passage of a prolonged note at a specific structural level to another of the same structural level. Thus, for example an arpeggio can represent a chord, because each note keeps its trace until all the notes are heard (see appendix II for some psychoacoustic evidence for this).

For Larson, although aspects such as harmonic rhythm, metre, harmony, etc, can contribute to listen to prolongation, they do not create it. Prolongation originates in *trace shifts* regarding to *magnetism, inertia* and *gravity* forces. The violation of these forces causes the expansion of the reference contexts wherein those forces operate. For example, in example 3.1, the violation of the tendency of g^4 from bar 1.3 to follow $f\#^4$ expands the reference context of a^4. That is to say, when these forces do not take place as expected, the trace *searches* for a note where the force can effectively operate, expanding in this way the referential context. It is as if the a^4 from bar 1.3 could *comprehend* that the g^4 immediately following is not the one that can carry out the proposed forces and therefore *it projects* towards the next g.

Within this context, harmony is not a condition but an emergent property of the interaction of musical forces produced by the melodies. Prolongation, instead of depending on the differences between consonance and dissonance, or between the harmony and counterpoint rules, is prior to them. Thus, prolongation - and only prolongation - always establishes what note is heard as stable in a particular context. In other words, a note is a prolongation because it *acts as* prolongation (it tends, projects towards another). To hear a note as unstable means to hear it as embellishing a more stable note and, for that reason, as belonging to a more remote level of the structure. Within this background the elements of a deeper level of the hierarchical structure are “abstractions” more than “literal events selected from the surface”, although they are present in notation with the appearance of surface events. The note in itself is not what is prolonged, other than prolongation is an abstract representation. Therefore it is irrelevant to establish which note is prolonged when it appears many times on surface. For example, in example 3.1 (p. 53), is a^4 from bar 1.3 the one which is prolonged? Or is it a^4 from bar 1.4? Or are they both? For this approach these questions are irrelevant, while, as we will see, it is essential for the definition of other prolongational perspectives.

Cohn and Dempster (1992) made an important contribution when characterizing the different ideas of hierarchy underlying the diverse theoretical traditions (particularly prolongational theories). They basically propose that a hierarchical system is *inclusional* when the elements that occupy the most comprehensive levels are not literally taken from the subordinate levels, but are abstractions of them. On the contrary, a hierarchical system is *representational* when the element from the most comprehensive level is literally taken from the subordinate level. Cohn and Dempster declare that Schenker is ambiguous when ascribing to one or another type of hierarchy. However, they make clear that inclusional hierarchy is what better characterizes the kind of heuristic that Schenker proposed.

From an exclusively epistemological interest, this is one the most distinctive features of original Schenkerian theory: a tonal musical composition can be understood in terms of abstract representations. Each hierarchical level is an abstraction and not a piece of surface. The mechanisms by which those abstractions can be justified allow splitting key aspects of music surface (such as rhythm and metre) without harming the temporal nature of music. Simultaneously the process itself, because of its heuristic nature, legitimizes hermeneutic creativity. For this reason, despite the highlighted contribution, Cohn and Dempster's (1992) proposal is extemporary. It is probable that the sense of hierarchy used by Schenker is related more to a Prussian military interpretation than to a computational proposal, like the one used by these authors. This approach lets Schenker talk about the *nature of hierarchic positions* and affirm *the supremacy* in a prioristic terms. Cohn and Dempster's proposal shows a *computational* concern not included, of course, in the original agenda. However, later, that concern was granted to the prolongation idea itself, giving rise to other prolongational perspectives that we will briefly analyse now.

I.2 Prolongation and *implication*

The Implication- Realization (IR) model proposed by Leonard B. Meyer (1973) and developed and systematized by Eugéne Narmour (1977, 1990, 1992) is a reductional model. Its strategy consists of using notational devices that contrast the music's structural elements with the representation of *music surface* provided by the original score. Although its characterization is different to the Schenkerian tradition the model employs the prolongation idea. Here, prolongation is not seen as the Schenkerian *Auskomponierung* but as an example of the implication principles, according to which certain structural configurations *imply* others. Consequently, it is not possible to understand the extent of the idea of prolongation in the Meyerian theory without comprehending the concept of implication. The dialectic *implication-realization* relationship is linked to certain traditional dichotomies in the theoretical ideas: opening-closing, stability-instability, etc. For Meyer (1973) the implicative relationship is established when the events in the music surface are presented in such way that they cause convincing inferences about their previous connections and about the ways in which they could continue by achieving the stability condition or closing condition.

Although we could say that some of the principles Meyer assumed have a clear Schenkerian inspiration, his intention is openly more psychological, and that is why he intends his statements to develop beyond the limits of a style or an exclusive music practice. However, he soon describes the rules for which these principles are applied in a particular way to a particular style. The general implicative principles are consequently limited by stylistic restrictions that in some extent work as *a priori* configurations (established by the stylistic practice) whose dominion in the heuristic of analysis is not very different to the linear progressions in the Schenkerian scheme. It is interesting to appreciate that both programmes have similar motivations and concerns: while Meyer makes explicit his concern about the problem of *unity* and *coherence* in composition explicit, Schenker talks about the piece as a *whole* and the exegesis of *tonal coherence.* For this reason it is quite suggestive that both proposals encompass the piece's time configurations in those a prioristic configurations, in as much as they establish the limits of the structure. As Cook (1987a) mentions, "*In both cases the analysis is saying why it is appropriate for the music to end where and how it does*" (p.75). This aspect regarding the problem of time configuration in performance is particularly interesting (see Chapter 9).

Within these conditions an unstable event produces an implication. The realization of such an implication is not necessarily immediate and may take place after other events, with implicative nature, are presented. These events are understood here as prolongation. According to this, more than just prolonging an event, they prolong an implication without adding an implicative function themselves. For example, in a pattern of implicative notes *asking for* realization, prolongation results from keeping the effect of the notes of the pattern until realization is reached (sometimes, in order to reach the realization, the notes that that indicate the path through which the line must move until reaching such realization are also prolonged). For Meyer, the most important difference with any aspect of the Schenkerian theory is that the implication patterns are mainly determined by the rhythmic impulse. Tension and relaxation, stability and instability, etc, are not only determined by leading voice and tonal concerns, but mainly by differences between weak and strong events that lead to thetic and anacrustic impulses. If the rhythmic impulse *asks for* completion, then the note of such an impulse will be prolonged until reaching the realization within the proposed pitch pattern.

This does not mean that Meyer is not paying attention to the voice leading. The analytical examples that he presents allow us to appreciate that his concept of prolongation is also based on the notion of the voice's linear development. However, in this concept there is a series of principles that rule voice leading and determine the hierarchic structure status of an event that are new. These principles are: (i) the agreement with metric structure; (ii) the implicative power of the note, or how much a note implies a certain melodic motion; (iii) the goal function of a structural motion of the note; (iv) the structural importance obtained by an event in a previous presentation that makes the event *maintain* its acquired status although it has lost the source of that status (for example an event that in its first presentation emerges in a strong beat and then repeats in a weak metrical position, through repetition maintains its structural status); (v) the *prominence* of certain note obtained by a set of features (pitch, duration, dynamics, register, etc.) (Meyer 1973).

The relative prominence of the events produces a hierarchy. But the prolongational hierarchy appears only vaguely here. Actually, the events that lead to prolongations do not seem to organize in a totally hierarchic way and prolongations can bifurcate or converge - the convergence of two implication patterns lead to a greater prominence of the event. Briefly, within this background convergence does not only depend on the abstract linear components that result from the voice leading arrangement in terms of strict counterpoint, but that also convey rhythmic-harmonic components of the musical surface.

For Meyer, similar to the Schenkerian tradition, prolongation is understood as a structure-ornament opposition. However the clarification of this relationship takes place from the music surface to the deep structure, through a reductional process, and not the other way round, as Schenker understood it. Meyer and Narmour’s interest centres on the surface level and not on underlying levels. Thus, the relevant information for the process achievement comes from the same surface, and the process in itself starts from an exhaustive observation of that surface. The musical surface is heuristically examined, but neither Meyer nor Narmour (1990, 1992) - who intended to enunciate principles tending to formalize the main concepts of the theory - propose a complete formalization of the reductional process. For them a further formalization leading to a more algorithmic application of the theory’s principles would threaten them by transforming the analysis in a circular and self-referential process.

The prolongation role in the Implication/Realization approach can be summarized as Meyer (1973) does:

> *“Implicative inferences are possible because the regularity and orderliness of a pattern suggest probable continuations which the competent listener understands and which the conscientious critic attempts to explain. The matter can also be stated objectively – as thought stylistically coherent and syntactically structured melodies themselves actually obeyed, or “behave” according to certain basic principles. In terms of proximate realization, the general rule would then be: once established, a patterning tends to be continued until a point of relative tonal-rhythmic stability is reached. Prolongations and extensions may, as we shall see, delay closure; and defections may give rise to subsidiary or alternative goals as points of closure. In terms of remote realizations, the general rule would be: Continuations not realized – or realized only provisionally - before significant pattern closure has taken place will probably be so subsequently. Often such delayed*

> *realization will take place after a repetition of the initial pattern has reinforced the implications generated when it was first presented.*
>
> *These 'laws' may, in turn, be subsumed under a still more general principle:* Patterns tend to be continued until they become as complete and stable as possible. *Completeness and stability are determined not only by the particular attributes of the pattern itself, but by norms of the particular style being employed – its syntax, traditional forms and conventional schemata."* (p.130).

Therefore, an important conceptual difference with Schenkerian tradition - especially at the moment of considering the appeal that prolongation has for the theoretical studies of performance - is the static nature of prolongation. Here, implication is what provides the impulse for musical movement, and prolongation only delays, or varies its effects. This static point of view of prolongation is the consequence of the foreground to background orientation of the analysis that leads to a conception lacking the organic quality provided by the Schenkerian approach.

I.3 Prolongation and generativity

I.3.1 The original programme

In 1983 Lerdahl and Jackendoff proposed a *Generative Theory of Tonal Music* (from now on *GTTM*) in which they intended to model the intuitions of the experienced listener. They described the components of musical structure that, due to their hierarchical nature, can produce a computational processing of musical information that results in those intuitions. So we see that from this perspective, music theory is considered as a branch of music psychology, its purpose being to describe the functioning of the musical mind (Lerdahl 2001) and to understand musical knowledge as computational processes operated on mental representations that are susceptible of happening only on specific musical objects that ascribe to certain structural characteristics (Jackendoff 1987, Lerdahl 1988a; see in chapter 4 a discussion about this approach in the field of music performance). According to that, this theory discerns from the just mentioned in its pretentiousness of validity based on the explicit search of "*general psychological plausibility, (...) coherence and parsimony (...) and the empirical evidence for or against it*" (p.5). This approach rejects all kind of introspective research (as phenomenological foundation), for which the ways the described structures and processes are organized must be reconstructed from objective data. In this enterprise, reduction as an analytical procedure makes evident the hierarchic mental representations of an ideal listener. Lerdahl (2001) himself formulates a clear comparison of the extent of the idea of reduction in his theory and in Schenker's:

> *Heinrich Schenker's (1935/1979) well-known approach to reduction has both a metaphysical and an aesthetic basis, depends on an a priori construct (the Urzatz) that has a pervasive top-down influence on an analysis, is informal in its application, and emphasizes voice-leading features. GTTM's, in contrast, has a psychological aim, has no metaphysical givens, proceeds by rule, and emphasizes rhythmic and harmonic features. In both approaches, structural importance is a question not of surface salience but of syntactic stability.*
>
> *GTTM restricts reduction to that of a strictly nested, constituent hierarchy, allowing the use of tree notation".* (p.10)

The theory proposes a view of tonal music in which four of its components can be understood as hierarchical and consequently as generative, stating the extent of the theory's description. Among these, time-span reduction shows the relative structural importance of the pitch events within the rhythmic units that result from the piece's segmentation. Prolongational reduction reveals the hierarchy of pitch stability, seeking to capture the listener’s intuitions about tension-relaxation in music. In his way, *GTTM* considers the range of music’s pitches from a prolongational perspective (it conceives the idea that certain events can keep their activity beyond their actual physical reach) but judging how pitch patterns and tension-relaxation patterns are related to the particularities of their own temporal developments (Lerdahl, 1988a). Rhythm participates of reductional decisions about tension and relaxation, as the relative importance of pitches will differ according to the events’ duration.

GTTM understands tension-relaxation as consonance-dissonance (approximately what Larson would call *inherent stability*) with relation to the implicit or explicit harmony. Therefore the two typical prolongational situations are repetition (understood as strong prolongation) and consonance relationship (understood as weak prolongations). That is why repetition as much as consonance prolong by definition, establishing respectively strong and weak prolongational levels (Figure I.2c and b in that order). Although the extent of the explanation of the concept of prolongation that was provided at the beginning of chapter 3 was reduced, it allows seeing that prolongation *as process* implies very different facts according to the theory in consideration, though *as product* they can produce equal or similar configurations. This is not a minor issue, especially if the theory has the psychological aim of modelling the listener’s musical intuitions. In *GTTM,* the *progression*, as opposite of *prolongation*, happens when the harmonic base of two events are different (Figure I.2a)

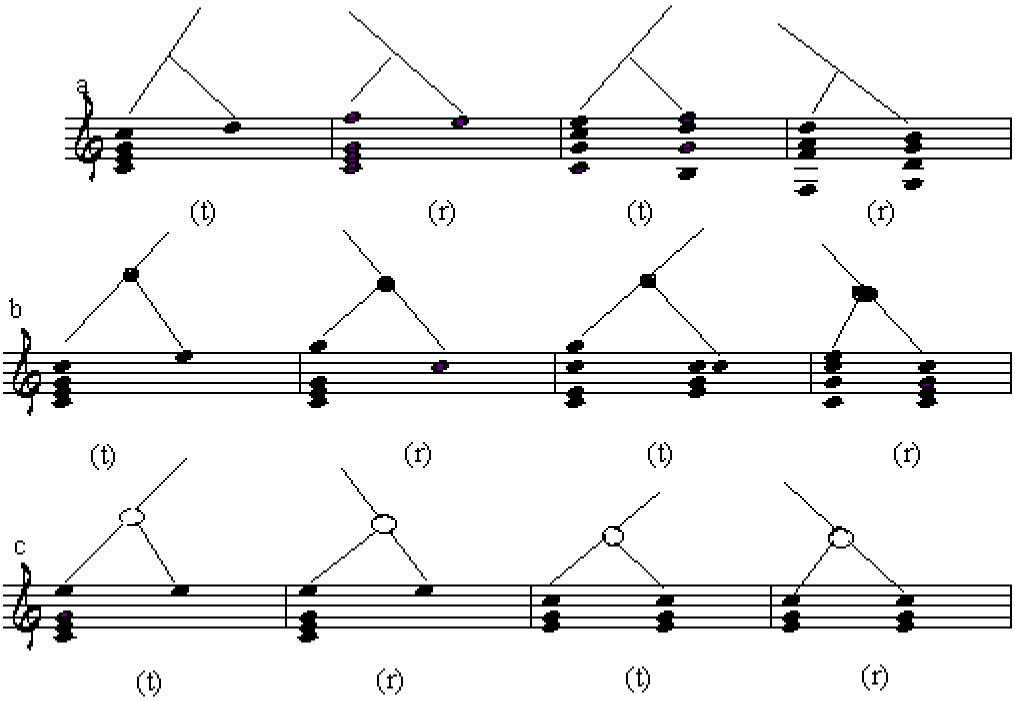

Figure I.2. *Progressions and weak and strong Prolongations. (From Lerdahl & Jackendoff 1983 p. 181)*

Since Lerdahl and Jackendoff's entire analytical programme is based on the possibility of segmenting the musical surface until the last levels, and on the clear isolation of the musical event as the unit of hierarchic organization, the tension-relaxation relationship is understood as dominance and subordination. The idea is that given any pair of linked events, one is always subordinated to the other at a given level. The graphic representations of the latter are the left and right branching diagrams. The branching constitutes an important heuristic within the theory (as are the *voice leading* graphics in the Schenkerian theory). In the GTTM the analytical decision that determines whether a branch goes towards right or left (for determining the subordination-dominance relationships) concerns metric-rhythmic aspects while they come from decisions taken in the *time-span* reduction.

The temporal reduction regulates the events that become available in the succeeding levels of analysis, providing the base for an optimum prolongational connection. Similarly, the tension-relaxation relationship is understood within the available patterns from the metric and grouping structure, ranked through time-span reduction. Logically, the fact that the tension-relaxation conditions come from the hierarchization of pitch events within the temporal intervals depends on the organization of events in strong-weak metric relationships, and on the possibility of splitting the music surface until its very last consequences. From this two principles that clearly distinguish the idea of the prolongational structure in Lerdahl and Jackendoff from that of Schenker can be derived:

In first place, the *obliged branching* principle, which demands that all events of music surface exhibit their structural status regarding the adjacent events in each level. For branching establishment this condition imposes severe restrictions of *well formedness*. Figure I.3 sketches these restrictions.

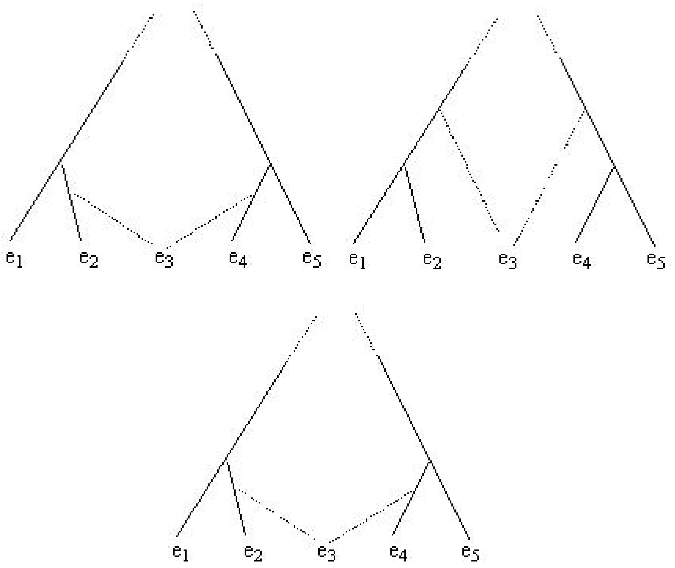

Figure I.3. *Well formedness constrains on prolongational branchings. (From Lerdahl 2001, p.16).*

In second place, a *Parallelism Principle* occurs in which parallel passages must be interpreted in a parallel way. The idea of *Ursatz* that Schenkerian theory uses disqualifies this principle by definition.

Therefore, in the *GTTM* prolongation depends on how the listener segments surface, and this constitutes an ontology of prolongation entirely opposite to the Schenkerian one. For the *GTTM* the whole derives from the grouping of parts. The hierarchical structure originates from the capability of the events to make integral groupings that, by recursivity transform in events that display the same capability. Once more, recursivity is the distinctive principle of hierarchy. The organicist sense of the Schenkerian theory is the opposite. Like an embryo that reaches different embryonic states, hierarchy does not emerge from events' aggregation at successive levels, but by the transformations of a level as a whole in an other, as a new whole (Schenker 1926). The succeeding levels subsume each other not resembling a tree branching but, as in a *matryoshka* each level is a totality with its own unique organic criteria, basically determined by a greater amount of detail and originality of the more external levels, and concomitantly by the most stereotyped forms of the deeper levels (see in pp. 65-9, the discussion about the idea of recursivity in Schenkerian theory).

According to Lerdahl (1988a) decomposition of the musical surface into a discrete series of constitutive elements is an essential condition for music comprehension. As we will see further on, this is a statement closely related to a model of music comprehension based on a generative linguistic model and its concomitant cognitive approach. Given this idea, prolongation, as Lerdahal remarks, has a syntactic sense:

> *"Intuitions about pitch derived tension and relaxation in a piece can be expressed in terms of strictly hierarchical segmentation of a piece in prolongational regions, such that:*
>
> *a) each region represents a global tensing or relaxing in the progression from its beginning to its end, and*

> *b) tensings and relaxings internal to each region represent subordinate and non overlapping stages in the overall progression."* (Lerdahl and Jackendoff 1983; p. 211)

Within this background, the overlapping situations between *prolongational regions* do not happen in the listener's intuitions; when they seem to happen, it may possibly be due to the emergence of a rivalry between components. Therefore, prolongational reduction constitutes a hierarchic structure, fulfilling recursivity, adjacency and non-superposition principles. It is proposed as a top-down process subject to the determination of: (i) regions; (ii) head of the region –or more important event-, and (iii) subordination - left or right - of the event.

Lerdahl (1997a, 2001) is very clear about this matter: the prolongational reduction of the *GTTM* is a *Representational Hierarchy*, in which each hierarchic event persists at superordinate levels (each tree leaf persists as such in the following levels).

We will see in next section why it is very probable that the problems of strict subordination (or unilateral branching) and postponing of voice leading treatment are the reasons why, in spite of the high degree of formalization the *GTTM* presents, it has not been approached as heuristic in the music performance studies such as those in Schenkerian theory. Not by chance, more current approaches seek to introduce these matters.

I.3.2 Further developments of the generativist programme

In his *Tonal Pitch Space Theory* (*TPST*), Lerdahl (2001) characterized a frame to define dissonance in more depth, which is central in describing tension-relaxation relations. The basic tonal space is a virtual space in which both psychological distances between pitch events (notes, chord, tonalities) and conditions of coherence between them are represented.

The space displays levels of representation expressed by stable typified pitch structures that are organized according to an order of increasing stability: (i) the octave; (ii) the perfect fifth; (iii) the chord; (iv) the diatonic scale; (v) the chromatic scale. A note that does not belong at a given level, for example the level of the chord, but that only belongs at the lower levels (the diatonic scale and the chromatic scale) constitutes for this reference level (the chord level) a dissonance. Thus, the movement by step within a certain level assures the coherence of the movement. For example, if one goes from a given chord's note to another note that does not belong to the chord level, it will be considered as a dissonance regarding this level. Therefore, this note's instability will increase. From there, in order to recover its stable original state, it will show a tendency to make the movements that are necessary to return to a note belonging to the chord level but which is only one step from the departure note in the chord level of reference. For example, in the pitch space of the chord corresponding to I degree in C Major, if the melody departs from G, and then comes to F, then it will tend to reach the E. These ideas try to wholly formalize the musical treatment of the consonance-dissonance concept and therefore they become clearly related to the principles of voice leading. If the extent of the activity of a pitch is very great, this implies that this pitch will be adjacent to another belonging to superordinate levels (Lerdahl, 1988b).

The *Tonal Pitch Space Theory* (Lerdahl, 2001) models the cultural treatment of dissonance related to degrees of sensory consonance (contextual and inherent stability in terms of Larson [1997]), because it constrains the idea of embellishment to a certain level of the pitch space (Lerdahl, 1997). Then, prolongation understood in the context of the *TPST* is considered as a way of assigning a degree of relative stability to any pitch event (pitch class, chord, tonal region) within a multidimensional geometry which takes into account more than just the vertical aspects. Reduction, in this context, consists of recognizing the routes that a given note would have to take in order to find the most stable note as parsimoniously as possible.

The *Strict Hierarchy Principle* of *GTTM* - according to which each subordinated element connects to a single superordinate element - is problematic in representing the listener’s intuitions in tonal music. We have seen that with respect to the inclusional hierarchy, this is not a problem. Lerdahl (1998) proposed a solution to this question without moving away from his idea of hierarchy, which is, in fact a representational one. This solution is double branching.

GTTM neither considers the existence of slight nuances of *attachment* of a given event to a given prolongation. Because of this, Lerdahl (1997) recognized that tree representations do not capture all the elements of the prolongational aspects. After that, he proposed a prolongational representation incorporating a network aspect, in which the elements are chained in nodes without the restriction of establishing an only branching. This new modality of representation shows the tensions between two different ontologies of prolongation: prolongation as association and prolongation as hierarchy, that, as is seen in chapter 3, involve different epistemological standpoints.

Appendix II: Prolongation, listening and cognitive science

We have seen in chapter 3 (pp. 65-9) that the Schenkerian tradition in the American scene has been constrained by a strong empiricist aspiration (often, as we have seen, wrongly attributed to Schenker's psychologistical thinking). Classical cognitive science and, in particular, music psychology, has offered important support to this. This support should also constitute the basis of any study on communication of the prolongational aspects in performance. For that reason, it will be taken as the point of departure in this thesis. In fact, this evidence offers both an epistemological and methodological foundation for the first series of experimental works described in chapters 5 and 6, which approach the communication of prolongational structures from a classical objectivist perspective. In addition, the impulse that music psychology received was of great magnitude when considering problems that prolongational theory elicited in the discussion of musical experience. Finally, it is important to consider that a part of Schenkerian psychologicism, in particular that tied to its *naturalist* aspiration, involves finding psychoacoustic and cognitive evidence contributing to its plausibility, in spite of the methodological and epistemological differences.

II.1 Psychoacoustic evidence

When understanding the prolongational structure of tonal music as a linear process conceptually derived from the consonance-dissonance opposition, numerous psychoacoustic phenomena become involved. Although an exhaustive treatment of all of them would widely exceed the scope of this work, a brief review is presented in this appendix. Undoubtedly, the most comprehensive research, and most closely tied to voice leading issues, from a psychoacoustic perspective, is that of David Huron (2001), who offered a detailed analysis of the principles that govern voice leading in *common practice music* as of a psychoacoustic basis. However, from a wider perspective, the most important original contribution is that of Albert Bregman (1990), who introduced and developed the concept of *auditory scene analysis.* The way in which we *analyse* and understand our auditory environment, according to Bregman, involves a series of phenomena, *stream segregation* being particularly interesting for the problems under consideration. Basically, this principle describes how separating a stream of sound events from the rest of the acoustic environment is possible by selecting those events that constitute such a stream. Although it was developed for non-musical contexts, this idea could present a certain affinity with the notion of abstracting, listening to and understanding prolongation. But, in addition, sufficient evidence exists that allows us to affirm that these principles can operate in musical contexts. In other words, certain cultural stylistic guidelines have been able to capture some forms of acoustic processing. Thus, for example, some principles of Renaissance counterpoint (that control voice leading in Schenkerian Theory), seem to be crystallized to serve: (i) preventing the parts (voices) from integrating into each other; and (ii) that each part tries to be well integrated in itself. In this way the historical permanence of such principles would be a result of them mirroring some principle of aural organization. "(*The rules) were not just the arbitrary dictates of a particular style of music. The goals were the goals of that style, but many of the methods made use of universals of auditory perception.*" (Bregman 1990; p.494) Against this background, *stream segregation* is a sort of psychoacoustic *umbrella* operation that includes and depends on a series of more precise and defined phenomena. Among these, it is possible to mention the following phenomena.

II.1.1 Acoustic continuance

This consists of maintained sound energy over time. Continuance may be both physical as well as mental. This phenomenon is an example of an imaginative activity that can be controlled at will by listeners - especially musicians (Huron, 2001). The degree of presence of the indeed absent sounds depends on the temporal distance from the moment of its real manifestation (echoic memory). Therefore, both sustained and recurrent sounds are susceptible to be able to preserve more aural images than brief and intermittent stimuli. However, it is opportune to notice that this topic does not seem relevant to Schenkerian theory, since rhythm - and therefore the frequency of appearance of a sound and its total time of presence during the musical stream is considered basically as a surface phenomenon, without implications for the configuration of the deeper levels. Nevertheless, in *common practice*, notes considered tonally more structural are quantitatively more emphasized.

II.1.2 Pitch proximity

Alternation between low and high notes in the course of a melody gives rise to a virtual *split* of the melody in different *voices*. The pitch proximity in each one of such *voices* creates an association between them strong enough to compensate and *suppress* the entailment based on the temporal proximity between contiguous notes. Thus, pitch proximity and velocity co-vary in this operation. This phenomenon clearly refers to *Körte's Third Law*. It was originally enunciated in relation to visual phenomena. This law indicates that the visual phenomenon of *apparent movement* depends on the distance between the objects and the speed of the exposition. Huron and Mondor (mentioned by Huron 2001) attributed certain kinematic principles to this law. This is interesting in the light of the incidence that the representation of motion may have in the performer's representation of the musical structure. In other words, the way in which the performer may obtain the representation of a melody at a certain speed could be influenced by the kinetic aspects involved in instrumental sound production. The *principle of pitch proximity* (Huron 2001) has strong implications. Firstly, the possibility of identifying melodic lines depends on the overlap degree of the pitches. In this way, the fact that the underlying voice leading shows a “much more linear” nature than the surface becomes a condition for voice leading abstraction process. In other words, if the underlying voice leading were not more linear than the surface level it would be contradicting the principle of pitch proximity, and therefore identification of a split line and the subsequent voice leading abstraction would be harmed. Secondly, the pitch proximity principle contributes to the interpretation of two crossed lines as two lines changing their direction when “they touch each other”. Thirdly, in pitch sequences, listeners tend to extrapolate future pitches according to their proximity instead of according to time proximity. In other words, when listeners evaluate melodic continuity they prefer the nearest note in pitch rather than continuing the directional tendency of the contour.

The pitch proximity principle: (i) powers the presence of small intervals (steps) over large intervals, in order to psychoacoustically preserve the line continuity; (ii) anticipates the segregation of more than one line when large intervals exist; and (iii) regulates the melodic continuity expectations.

II.1.3 Fusion

This is the process by which events that have risen at different moments from a same source are connected (Bregman 1990 p. 30). Fusion can be (i) simultaneous - for example when two single sounds fuse into each other and therefore are experienced as properties of a single compound sound (spectral fusion); or (ii) successive - when sounds in a sequence can be organized as a line. Although more specific research is needed, it is possible to think that this phenomenon contributes to the mental configuration of a melodic line.

Other psychoacoustic principles would also contribute evidence to outline the possible role of performance in the perception of prolongation. Among them, Huron (1992) proposed *onset synchrony* and *timbral differentiation.*

II.2 Psychological evidence

In addition to those psychoacoustic foundations, there is an important body of empirical evidence gathered in order to demonstrate the cognitive reality of some theoretical concepts such as underlying voice leading. For example, Deutsch and Feroe (1981) developed a formal logical model for tonal structural information processing when listening, memorizing and imitating a tonal melody. In this model two fundamental components exist. In the first place the alphabets, or modes in which pitches are typically organized in the context of tonal music language. Thus, the chromatic scale, diatonic scale, major perfect chord, etc. are alphabets. In the second place there is the formal operator that captures the kind of relation established between two elements in an alphabet (for example, ascent, descent, repetition, etc.) Thus, for example, processing the interval C-E implies applying |+1| on the major perfect chord alphabet, but |+1 +1| on the diatonic scale alphabet. According to this system prolongation, as a mental process, would arise when operating with the formal logical system and therefore would depend on the use of alphabets and operators. The operator would reveal the prolongational nature, whereas the alphabet would delimit the “scene” of the prolongation. In this sense there is a certain parallel with Salzer and Schachter’s (1969) assertion regarding the functions of harmony and melody in the prolongation process: one indicates the proper way of unfolding the prolongation and the other *organizes a certain scene* for it.

The logical system for pitch processing appears with important computational advantages. Melody is understood through a set of operations applied to certain notes belonging to the most important hierarchic levels, which are taken as a reference element to apply the operator in question. Accordingly, those notes are easier to process and remember. This is due to notes in the more structural levels being represented more times in the system, and this redundancy increases the probability of their being remembered. The model offers a reasonable framework for the hierarchic computational processing of a tonal melody that is not contradicted by other structural principles of melodic configuration (good continuity, proximity, etc.). In an experiment, Deutsch and Feroe presented structured and non structured melodic sequences – according to the model. They found that the listeners could recall better the structured sequences. This means that greater pitch structuring influences melody recall. In other words, tonal structure in terms of hierarchic levels (as defined by the model) is used by listeners when remembering melodies.

Mary Louise Serafine (1988) was a pioneer in incorporating the notion of hierarchical levels in Schenkerian terms to a set of cognitive processes that would characterize musical development throughout childhood. Thus, *abstraction of hierarchic levels* is a non-temporal process, since this

> *"do(es) not result from immediate, note to note, phrase to phrase, reality; rather (this is a) more formal, logical abstract operation performed on the musical material... (the non-temporal processes) must be distinguished from the temporal processes (…) tied to surface level, event to event groupings."* (Serafine 1988, pp. 79-80).

From her studies with children, resolving simple matching (goodness of fit) tasks between melodies and their rendered structures (foreground and middleground voice leading reductions) she found that, understood in this way, *abstraction of hierarchical levels* is a process that settles in human cognition at about the age of 8. If one considers that the acquisition of the harmonic-tonal frame takes place between the age of 5.5 and 6 (Lamont, 1998; Welch, 1998; Davidson, 1985), it is possible to think that this operates as a pre-requisite for the abstraction of the hierarchic levels. In spite of the evidence supporting the idea that this is a maturational process, the differences found by Serafine with respect to child and adult success in the tasks make one think that abstraction of hierarchic levels might require a greater formal knowledge.

In studies with adults, Serafine, Glassman and Overbeeke (1989) used *compound melodies*. A compound melody is a melodic organization in which although all the notes that take part in it sound in succession they comprise different *voices* from the voice leading point of view. The most typical examples are compositions for solo melodic instruments (especially from the Baroque repertoire), in which the presence of great melodic jumps alternating with step successions *split* the melody into two different lines (Forte and Gilbert 1973). From a collection of those melodies the authors administered two types of experimental tests: a) by goodness of fit matching between a melody and its rendered voice leading reduction; and b) by similarity judgment between melodies with either the same or different underlying voice leading. Their findings revealed that listeners could correctly match a melody with its exposed prolongational structure and that they would unconsciously use the prolongational structure when judging similarity. These findings provide evidence for the cognitive reality of the reductional representation. Nevertheless a more comprehensive generalization is not possible, since although the researchers used compound melodies very associated to some principles of Schenkerian theory, they would not be useful for making a more inclusive analysis of prolongation as a psychological process, since the study is limited to phenomena proper to prolongation in such kinds of melodic configuration (as counterpart, see for example Cook 1987b, where other Schenkerian principles could not be demonstrated empirically).

Unlike Serafine and her colleagues, Bigand (1990, 1994) used a *sui generis* interpretation of the *GTTM* prolongational reduction. For it, he made use of the *family resemblance* notion (Jackendoff 1987) attributing to a four melody *family* the same prolongational reduction as the only common attribute; and by applying the same rhythmic and melodic contours to different harmonic frames he generated another four melody family with analogous surfaces. He could verify that "*(t)he listener manages to hear melodies belonging to the same family as variations on an underlying pattern which is more important than the differences observed on the musical surface* " (Bigand 1990, p. 57). This would provide reinforcing evidence for the cognitive reality of prolongational reduction.

Dibben (1994) took up the studies of Serafine, in which she criticized: (i) the shortness of musical fragments, (ii) the use of instructions that may convey a bias in the answers, (iii) the unsystematic treatment for composing the reductions, and (iv) the reduction's proximity at the surface level. In order to overcome the two first observations she proposed the use of longer examples (up to 16 measures), and warning the subjects about the fact that the reductions are simplified versions of the melody to match, respectively. Aiming to find more consistent evidence concerning the cognitive reality of the hierarchic structure of music and avoiding the difficulties that the treatment of Schenker's theory offers for experimental designs, she made use of the theoretical frame offered by the *GTTM time-span reduction* (Lerdahl and Jackendoff 1983). In using the time-span reduction, she could guarantee a more systematic treatment in the composition of the reductions reaching deeper structural levels, thus overcoming her two latter observations. In her experiments, listeners were successful when matching up the correct reduction with the melody. In addition she observed that this ability increased in relation to the structural level at which the events characterizing the wrong reductions belonged. Although she did not approach the prolongational structure itself, this evidence contributes to consider the cognitive reality of underlying structure theories.

Following Serafine's route, Shifres and Martinez (1999, 2000a; Martinez and Shifres 1999a, 1999b) began from the analysis of reciprocal influences between musical surface attributes (understood as the note-to-note level) and those of the underlying voice leading (as the *prolonged* structural component) in tonal music cognition. In a first experiment 190 adults and 774 children between 6 and 14 years had to compare a target melody with two comparison melodies. The first of these had the same underlying voice leading as the target melody, and the second had a different underlying voice leading. This difference consisted of one or two changed notes. Results showed that listeners made unconscious use of the underlying voice leading in judging the similarity between pairs of melodies. This behaviour appeared at the age of 7 and was generally maintained stable throughout childhood until adulthood. In adulthood, representation of the prolongational structure does not seem to be influenced by musical training, continuing the tendency demonstrated at previous stages.

Interesting evidence arose from the methodological treatment of the stimuli used in the test: in order to experimentally control *surface* similarity a *similarity model* was developed using a correlation coefficient that measured the association between melodic contours. This *correlational model* turned out to be a useful measurement in order to estimate the theoretical similarity between the members of each trio of melodies. In this way, the reciprocal influence of musical surface and underlying voice leading when judging similarity could be assessed. This correlational model was validated in a comparative study with other theoretical similarity models (Martínez and Shifres 2000).

From this, listening to a musical piece was understood as a dialectic relation between listening to the surface and to the deeper structural levels. A second set of experiments with adults, using the same experimental paradigm (similarity judgment), confirmed the previous studies. But, in addition, they revealed that neither the contour hypothesis (according to which two melodies are judged as more similar if the correlation between their surfaces is higher) nor the structure hypothesis (which predicts that two melodies will be judged as more similar if they present the same underlying voice leading) could explain by themselves the found perceptual similarity. These results lead to the proposal of a *perceptual rivalry* hypothesis by which attributes of the surface interact with those of the underlying voice leading influencing the listener’s judgments. After this, Martinez (2001, 2002) verified the *constituency* hypothesis of prolongation from which she established that prolongation is experienced by the listener as a *syntactic component*. Shifres and Martinez (2002) found ontogenetic evidence of this capacity.

Appendix III - Towards a pragmatics of music interpretation

III.1 Introduction

In his study on how people give meaning to a conversation, H. P. Grice proposed the *cooperative principle* (Grice 1989). This principle can be briefly enunciated as: *Make your conversational contribution such as is required, at the stage at which it occurs, by the accepted purpose or direction of the talk exchange in which you are engaged* (p. 26). This superordinate principle comprises a series of rules or "maxims". Grice’s cooperative principle may be of most value in the analysis of communication in performance since for many scholars this approach can be understood as a nexus between the generative and the interpretative approaches (Eco 1979). According to Jackendoff (1983), Grice’s *conversational maxims* can be understood as a preference rule system. In addition, the interest is increased because although Grice enunciates the principle as a set of directives oriented to the speaker, many intellectuals think that those rules are, at the same time, organizing the interpretation on the part of the listener (at this precise point the system emerges as a preference rule system [Jackendoff 1983]). For example, when a listener, who (implicitly) knows this principle, listens to a reinforced utterance such as: “For me, this is Chopin’s piano prelude in B minor”, he or she understands that the speaker has a certain doubt about it being so. This ‘*for me*’ presents a manifest meaning in this context which is not inherent to its intrinsic characterization: if the speaker did not have good reason for saying it, according to the *cooperation principle,* he or she would not say it. Grice formalizes this *good reason* by the series of “maxims” or sub-principles. The meaning that the listener obtains from following the cooperation principle is a *conversational implicature* – a sort of inference arising from the interaction. This kind of *implicature* “*is calculable and one can make it explicit by a reasoning: even though it can be known* *intuitively, it is not valid as conversational implicature if it is not possible to substitute it by a reasoning*" (Bertucelli Papi, 1996). Grice states a number of needed conditions for a given implicature to be understood as conversational, that is to say, typical of the interaction. These conditions differentiate a conversational implicature from the other kinds of implicatures, namely *conventional* ones, that do not arise from the cooperation principle and are strongly linked by convention to lexical elements.

In music performance, the performer *contributes to the conversation* by carrying out an expressive action; for example a *ritardando* or a *crescendo.* These actions have not only a semantic value but also a value of use. For example, the semantic scope of a *ritardando*, which is fixed to a convention as a *lexical element,* highlights the grouping structure of the musical piece (Todd, 1985; Clarke, 1988). Furthermore, the listener has an implicit knowledge of the musical structure. For example, the listener knows principles – well formedness and preference rules (Lerdahl and Jackendoff 1983; Temperley 2001) – with which he or she establishes, while listening to a piece, a given segmentation into a number of units. If the expressive contribution that the performer adds does not satisfy both the expectations that the listener generated according to that implicit knowledge and the semantic convention of the expressive feature, then the listener of course may assume that *it exists* or that *the performer has a good reason for doing it.* For example, if the listener notices a ritardando but it is not at the end of the grouping unit, he or she may assume that the performer has a good reason to do it, wishing to imply something, for example, to express a given character, to give a sense of unity to the composition as a whole, etc. That *good reason* may constitute the basis of the performer's communicative strategy.

We are suggesting that the listener infers both in a conventional and in a conversational way. The conventional implicature arises when there is an agreement between the attributes of the musical structure and the lexical convention of the expressive feature. For example, a conclusive cadence (II-V-I) agrees with the action of a ritardando. This expressive musical resource *implies* that a musical grouping unit has finished. The conversational implicature arises while applying the *cooperation principle*, when there is no agreement between the structural attribute and the convention of use of such an expressive feature; for example, a ritardando without a conclusive cadence. This musical utterance *implies* that (i) the performer wants us to focus on this passage; (ii) in this passage there are some structural elements worth keeping in mind; (iii) these elements are related to other elements that the performer wants us to bear in mind, etc.

As Grice establishes, there are a series of parameters to differentiate conversational from conventional implicatures. One of them is the notion of *cancellability*. A conversational implicature can always be cancelled by the addition of information that either interrupts or makes it clear that the speaker is ignoring the *cooperation principle*. On the contrary, a conventional implicature cannot be cancelled. In the next section, we will analyse the data gathered in the segmentation experiment (chapter 6) in terms of the *cancellability* of the implicatures, in order to advance towards a pragmatics of music interpretation.

III.2 Analysis of the empirical evidence

At bar 22 of the Chopin piano prelude in B minor, a strong cadence takes place, marking the end of a group at the highest grouping structural level. As has already been said, the remaining bars may be interpreted either as a coda or as a delay of the progression $\hat{3}$-$\hat{2}$-$\hat{1}$, which therefore may not be considered as a group at the same hierarchical level; simply put, it is an expansion of that group, expanding once it has reached the harmonic relaxation. Here, both Martha Argerich and Alfred Cortot make the piece's most emphatic ritardando. Both of them are implying that an articulation between two groups of the same structural level has taken place. The information that Cortot gives after that (bar 24) agrees with this implicature: he takes up the initial tempo again, as if starting over again, and holds the dynamic nuance. On the contrary, Argerich adds information, *cancelling* this implicature: she continues this progressively slower tendency until the end, involving that ritenuto in a global process of stoppage and decrease that continues until the last note. Note how the listeners understood that the implication was cancelled at bar 22 in Argerich's performance and therefore tended to segment it much less than Cortot's. In a certain sense, Cortot implies the *quasi* interruption (see pp. 125 and ff.).

At bar 8 both artists perform an important ritardando, implying that a group of the highest structural level ends there. This agrees with the structural information: the first branch of the *interrupted form* (Schenker 1935) also ends there. The implicature (the fact that *there is a point of structural segmentation at the highest hierarchical level* here) cannot be cancelled, it is a conventional implicature. The opposite information that Martha Argerich's performance gives us after that – the more pronounced ritardando at bar 13 – does not succeeded in cancelling that implicature. In that way, listeners do not hesitate to segment at bar 8. According to the cooperation principle, Argerich *has a good reason* to play such a pronounced ritenuto with such an important *forte* at bar 13, even though this reason is not to highlight a highest level grouping articulation point.

Finally, observe bar 13. Two identical ascending arpeggios take place, one immediately after the other. Alfred Cortot plays the second one much more *piano* and a little slower. For an experienced listener, this may imply that Cortot is applying a sort of "baroque echo" criterion, playing the repetition softer. However, the following information (at the end of bar 14) cancels the previous implication since he does not take the initial values again and the echo character is abandoned. He implies that *he has a good reason to* do this *piano* for the second arpeggio. That good reason may be "to contribute to the unity of the passage at a point where so many superficial attributes seem to attack that unity." This would be his conversational implicature. Results of the high level segmentation task for the Cortot performance indicate that listeners tended to understand all the passage as a unit. The difference concerning this tendency observed for the lowest level segmentation (at bar 14 it is high and goes down at bar 15) indicates how the segmentation implicature is cancelled at this point.

III.3 Conclusions

In this appendix we have tried to explain the findings of one of the previous studies according to the Grice's *cooperation principle*. This conceptual framework permits characterizing the performance context while giving way to a description of the relations between musical structure and expressive microstructure and the way in which those relations operate on listeners' representations. In that way, the listener considers the context of the performance according to the way in which a given expressive action is related to (i) the musical structure (for example a cadence, a repetition, etc.) and (ii) other expressive actions in the same performance (a crescendo, a ritardando, etc.).

This double modality of the contextual links is evidence of the way in which the performance itself operates on the listener's (and probably the performer's) *cognitive background*, modelling the experience. Differentiation between conventional and conversational implicatures contributes to elucidate how the interpretative paradigm can complement the generative one. The latter could contribute to explain the way in which the listener processes structural and expressive information lexically established by convention, whereas the former might shed light on inferential processes involved in understanding music performance.

The ideas presented here constitute a first attempt at understanding communication between performers and listeners in inferential terms. This theoretical frame may contribute to elucidate an important part of this intricate communicational process that takes place when we listen to music and could be generically understood as *music interpretation.* However, the data examined here reveals that not all communicative aspects seem to be related to problems of inferential thinking. Particularly, current performance of 19th century music seems to present features that go beyond reasoning problems. In chapters 7-10, a new and opposite communication paradigm will be investigated hoping to go deeper into the study of communication and performance. It understands communication in terms of intersubjectivity.

Appendix IV - In search of a lost relationship

In an illuminating article, Johnson (1999) argued that there certainly is a genitive relationship between composition and performance. However, there is no reason why that primary relation has to be determinist. Therefore, what is the nature of that relationship? In order to venture an answer, Johnson makes us reread Marcel Proust’s *A la recherche du temps perdú* with the hope of finding a reasonable answer. In spite of the clarity of his intention, it would be opportune here to retake and extend that quotation, at the risk of focussing on other people's reminiscences. Readers will be able to understand and indulge this literary parenthesis if they consider a series of reasons. In the first place, Proust mentions some issues that, being relevant to the topic we are treating, are not treated by Johnson. Secondly, the route that the Proustian hero makes around his ideas concerning the problems of interpretation as art is greatly identified with what has been outlined here, especially in chapters 2 and 7. And finally, I could of course not express those ideas more clearly or more beautifully. When retaking the route on which Proust understood the artwork as part of his strong experience while attending Mme. Berma’s performance, it will be possible, in principle, to investigate how the artwork is carried out in the performative act, and, from this, to contribute to a definition of the artistry of musical performance. In this way it will be possible to outline a redefinition of the artwork in performance that contributes to finding healthy relations between the organization of structural attributes, created by the composer, and the particularities and constraints of the performative act.

Mme. Berma is an emblematic character within the Proustian narrative. She represents one of the *creator* performer models and allows the author to reveal enough of his aesthetic thought (Morán 1996). In this sense, it is interesting how she, as a *performer*, is put at the same artistic height as other creators in the story (for example, Elstir, the painter, or Vinteuil, the composer), thus deeply considering her artistry. In this passage in particular (in *The world of Guermantes*) the hero's devotion towards Berma is clearly identified with the romantic conception of performer, tied as seen, to the idea of interpretation as mystical revelation and, concomitantly, to the myth of the talented performer as genius. The protagonist attends a representation of Racine's *Phèdre*, by Berma. It is the second occasion that he has seen her onstage. The first had happened far back in the midst of youthful expectations surrounding her interpretative genius, and had finished in confused disappointment regarding said talent. However, this time...

> *"(Mme Berma) had just come onto the stage. And then, miraculously, like those lessons which we have laboured in vain to learn overnight and find intact, got by heart, on waking up next morning, and like those faces of dead friends which the impassioned efforts of our memory pursue without recapturing and which, when we are no longer thinking of them, are there before our eyes just as they were in life, the talent of Berma, which had evaded me when I sought so greedily to grasp its essence, now after these years of oblivion, in this hour of indifference, imposed itself on my admiration with the force of self evidence. Formerly, in my attempts to isolate this talent, I deducted, so to speak, from what I heard, the part itself, a part, the common property of all the actresses who appeared as Phèdre, which I my self had studied beforehand so that I might be capable of subtracting it, of gleaning as a residuum Mme Berma's talent alone. But this talent which I sought to discover outside the part itself was indissolubly one with it."* (Proust, 1921/1922 p. 54)

The first approach to the problem was to see the work of Racine and Berma's performance as detachable organizations. It clearly represents the perspective of the work of art as object. As they are separated existences, any considered quality or valuable attribute will correspond either to one or the other. This ontological split in music is shown to be deeply rooted in both common and academic language (and therefore thought): we talk about *playing* a *composition.* As it could be seen, the concept of work is itself erratic, but both for the objectivist tradition and for many of the perspectives that criticise it, this distinction is represented by the musical structure-performance dichotomy. The relation between work and performance, as presented in the previous quotation, appears as *univocal*. The work is everlasting and its essence is not affected by any performative aspect.

The first pitfall that faces this viewpoint is a variable and uncertain boundary between both terms of the relation. It is modified according to the performance context, which, in turn, is modified by the performance effect. The anecdote about the Argentine National Anthem mentioned in chapter 2 (p. 26) reflects this dynamic. When García recorded his performance of the National Anthem, he was not doing anything different from what was common in the rock music circles. But he mistook the context: rock's context is not the same that the National Anthem's. The limit defining what is performance and what is musical structure was another. However, although controversial, this artistic fact produced such a quagmire that it "moved the limit", allowing for performances that appeared afterwards to be taken as valid.

In the western academic tradition it would seem that the limit was clear because the score exists. But, as it was seen, the score has a certain opacity that can only become transparent through the oral tradition. This idea is present in the fragment from Proust in suggesting the work is a little more than just the written text: it is what all the actresses have done with it. This idea of work that rescues the oral tradition and is defined as the set of performances that have taken place over all its history, is used by many musicologists (Bowen 1999) – in Peircian terms, it would be a *type* of which each real performance is a *token*. However, both the romantic tradition and the objectivist perspective maintain that the score encloses the key to its own revelation. The way in which the performer forms a relationship with it will be proper to each tradition and will tend to guarantee that revelation. The degree of performance artistry depends on the result of this revelation. Berma is a great actress because *her genius* is able to reveal the sense of Racine.

When Proust says that talent and roles comprise one same thing, he is referring to that. However, how can they comprise one same thing? Continuing on his course it we will be possible to see how the relation between talent and roles (at least in the field of musical performance) has been singularly elusive.

> *"...her stage presence, her poses, which she had gradually built up, which she was to modify yet further, and which were based upon reasoning altogether more profound than those which traces could be seen in the gestures of her fellow-actors, but reasonings that had lost their original deliberation, had melted into a sort of radiance whereby that sent throbbing, round the person of the heroine, rich and complex elements which the fascinated spectator nevertheless took not for a triumph of dramatic artistry but for a manifestation of life*[1]*."* (Proust 1921/1922 p. 55)

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[1] *"non pour une réussite de l'artiste mais pour une donnée de la vie"* (in the original). Probably, the translation does not reveal two issues. Firstly, he mentions a *donnée* that is different from a *life manifestation*. Moreover, and most importantly, the original is talking about the artist, the person and not

Berma constructs her own performance without mysticism, by a detailed examination, *deep reasonings*, that encourage her *to constitute* her attitude in the scene. From this, *Phèdre* arises so triumphant that the spectator cannot see Berma. Cook (1999) wrote that it was said that when Hans von Bülow played Beethoven one lost the sense of Bülow's presence and only felt Beethoven's. This is the great performance paradox. As it was seen (chapter 2), the creative genius' *soul* has led so many to deny the performer. The performer is locked up in the secret spy paradox: if his or her talent is discovered his or her talent expires.

The objectivist tradition, as it was seen (Stein 1957, Cone 1967, Berry 1989) strongly enlists itself in this line, establishing a determinist relation between the revelation of the musical work from the score as the source of knowledge and every performative action.[2] According to Johnson (1999) the illusion that disoriented Proust is a fallacy whose false premise contains the *concept of work*: *"The assumption that the work is fully predetermined and knowable from its score, its promotion as* opus perfectum ed integrum *such that any transformation is by definition a fall, is naïve in its idealism and pragmatically unworkable*." (p. 55)

Finally, the paradox makes manifest a dilemma: to either deny the performer or deny the work. We appear before an impasse. Nevertheless, as Cook requests (1999) "*it may seem possible to develop models of the relationship between analytical conception and performance that are more challenging (both intellectually and musically) than those in general currency."* (p. 11)

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about the drama as abstraction, because, as will be seen further ahead, for Proust this artistry represents "a gift of life".

[2] Berry (1989) says: "*this book asks how, in very precise terms and carefully defined circumstances, a structural relation exposed in analysis, can be illuminated in the inflections of an edifying performance"* (p. ix-x). Notice the similarity of this paragraph with Proust's.

The reading of *A la recherche…*may continue offering some clues…

> *"...all these, voice, posture, gestures, veils, round this embodiment of an idea which a line of poetry is (an embodiment that, unlike our human bodies, is not an opaque, screen, but a purified, spiritualised garment), were merely additional envelopes which instead of concealing, showed up in greater splendour the soul that had assimilated them to itself and had spread itself through them, lavaflows of different substances, grown translucent, the superimposition of which causes only a richer refraction of the imprisoned, central ray that pierces through them, and makes more extensive, more precious and more beautiful the flame drenched matter in which it is enshrined. So Berma's interpretation was, around Racine's work, a second work, quickened also by genius.*[3]*"*

If the problem were simply to reveal the work, Berma need not have enveloped the work with *lavaflows of different substances*. On the contrary, she had only to get rid of them. The presence of those substances is what makes Proust see Berma's presence, what rescues her from oblivion. Nevertheless, he does not yet manage to understand what is Racine and what is Berma. He still does not see that porous frontier.

As we have seen (chapter 4, p. 89), from the psychological perspective, the interpretative conception of understanding is opposed to the generative in that the task of determining the relevant knowledge's hierarchy is, for the latter, the subject's responsibility. For the former, understanding both the environment and thinking takes place via a heuristic process in which information acquires progressively higher integration through a fabric of relations constructed from the information itself in its own context. Undoubtedly, the music reception conditions vary according to the performance's context and circumstances (Small 1998). The contemporary notion that the work "is finished" with the performer's participation arises from there, and although it is not completely clarified, it nevertheless once again gives a non-supportive role to the performer, in a new relationship in which the performer considers the piece's structural aspects in order to maintain the scaffolding of her own artwork.

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[3] In the original: "*a seconde oeuvre, vivifiée aussi par le génie; par le génie de Racine?*" Notice that the word vivifiée has a *life* connotation that the word *quickened* has not. Moreover, in the English translation, the final emphasis in the repetition – clarifying the reference to Racine's genius – is absent. This is the key to what the author is questioning at this moment. The translation does not let one see this deep and personal questioning.

For that reason, when Cook (2003) pleads to explore more deeply the relationship between the musical work and its performance, he speaks of going from a vertical linear relationship to a more horizontal one, in which meaning emerges through the relations among all the versions.

The trembling presence of Berma here is disconcerting. Evidently, she is *finishing* off the work (Eco 1981). In the particular case of music, the work is not only what the composer wrote, but also what is completed in the performer's interpretation translated into a particular set of actions. This appears clearly in the critical proposals (see chapter 2) that see performance as drama or narrative (Schmalfeldt 1985, Rothstein 1995, Shaffer 1995). But what actions make up this *interpretative* set? As Johnson says (1999), the interpretative act is a set of actions exerted personally within the work's intentionality. For this, studies of performance - in spite of their apparently *objectivist* methodologies - may be interpreted from a different perspective to the cognitive perspective, in order to relocate academicism and orient towards involving performance as a central factor in the work's ontology (Johnson 1999). For this it is necessary to advance more in the relation between composition and performance.

“...Was this genius, of which Berma’s interpretation was only the revelation, solely the genius of Racine?... I though so at first...” (p. 58).

“…I realised then that the work of the playwright was for the actress no more than the raw material, more or less irrelevant in itself for the creation of her masterpiece of interpretation, just as the great painter whom I had met at Balbec, Elstir, had found the inspiration for two pieces of equal merit in a school building devoid of character and a cathedral which was itself a work of art. And as the painter dissolves houses, carts, people, in some broad effect of light which make them homogeneous, so Berma spread out great sheet of terror or tenderness over the word which were equally blended, all planed down or heightened, and which a lesser artist would have carefully detached from one another. Of course, each of them had an inflexion of its own, and Berma’s diction did not prevent one from distinguishing the lines (...) But Berma at the same time made the words, the lines, the whole speeches even, flow into an ensemble vaster than themselves, at the margins of which it was a joy to see them obliged to stop, to break off; thus it is that poet takes pleasure in making the word which is about to spring forth pause for a moment at the rhyming point, and a composer in merging the various words of the libretto in a single rhythm which runs counter to them and yet sweeps them along. Thus into the prose of the modern playwright as into the verse of Racine, Berma contrived [4] to introduce those vast images of grief, nobility, passion, which were the masterpieces of her own personal art, and in which she could be

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[4] “*savait*” in the original.

> *recognised as in the portraits which he has made of different sitters, we recognise a painter.”* (Proust 1921/1922; p. 59-60)

From this perspective, what the composer made was *the material*. Thus, the performance does not *derive* from examining the musical structure but *is created* from it. Then, for the performer, knowing the musical structure is to know the material that she must dominate in order to make her own work. Of course, there are finer materials than others, as there are materials with more potential than others. But the value of the performative work depends more on the performative creative labour with such a material than on the material itself. In chapter 7 the relationship between composition and performance, considering the former as a material for building the latter, is explored. This relationship, based on Adorno’s idea of the *Dialectics of the Material,* is supported by the notion of *Transposition* (coming from the field of the semiotics of the *mass media*). Chapter 7 opens up both of them.

Appendix V - A performance, *The Pianist*, by Roman Polansky

This appendix presents some *materials* used together with the musical structure of Chopin's Ballade in G minor, in a particular transposition of this piece to a film. This description aims to contribute both to a better understanding of the concept of transposition and to an illustration of the notions of material and dialectic material-transposition. The idea is to illustrate that the genitive composition-performance relationship not only involves some aspects of the musical structure (as shown in chapter 10) but also many other materials concerning the historical, visual, social and cultural contexts. As film has a long history of transpositions, the notion itself may be more apprehensible if undertaken from this perspective. Understanding the complexity of transposition in music performance after this may be easier.

As presented in chapter 10, the transposition is a scene from the film *The Pianist*, by Roman Polansky (2002). The film tells the true story of a young Polish Jewish pianist - Wladyslaw Szpilman - during World War II. He was first imprisoned in the Warsaw Ghetto, but soon escaped from the terrible destiny of the extermination camps, fleeing from the Nazis already in retreat. The scene that will be considered is decisive for the story's development: Szpilman, who is fleeing from the destruction with which the Nazi army is devastating Warsaw in its retreat, faces a completely desolate city in which he looks for refuge, shelter and food. He finds shelter in a house that miraculously remains upright and relatively inhabitable. Precisely for this reason, it is also chosen by a German officer, Captain Wilm Hosenfeld, to establish logistic resources. In his inspection of the house, Hosenfeld discovers Szpilman and interrogates him. Hosenfeld discovers the pianist's profession and in distrust asks him to play the piano that still survived in the room. The piece that Szpilman chooses is the Ballade in G minor. The scene is crucial because, in the first place, it defines Szpilman's destiny but in addition synthesizes the work's content as far as the relation between music and life (or more specifically survival) and the waning of power relations while forcing an opposition between art and destruction. In addition it is a pivotal point in the psychology of both characters, a transformation that is perceived throughout the scene.

The materials that Polansky used to carry out the scene are abundant and the way in which these materials are organized in the finished artistic creation is exceedingly complex. One of these is the composition, *what Chopin composed*, involving all the structural and narrative characteristics that were analysed in chapter 10. The sole choice of the Chopin piece by Polansky implies the participation of a series of other materials that are also important in the construction of the cinematographic *performance*. Some of them are of a historical nature. For example, Chopin as a cult figure for the Polish national identity, probably derived from Chopin's political ideas about the contemporary situation of Poland being divided between the neighbouring military powers (Russia, Prussia and Austria). This image was generated even during Chopin's lifetime. Already by the 1820s Chopin had begun to be considered a *national composer* in Poland. This fact reflects the main changes in 19th century performance, related to the musical production migrating from the courts to the bourgeois centres in the large cities.

Other materials derived from the choice of the Ballade are related to more exclusively musicological questions. One of them is the Slavic folkloric connotations the ballade has (see chapter 10) as opposed Germanic culture. Also important in this pianist's story, is Chopin’s place and that of his work as emerging from the common idea of him as the apotheosis of the Piano.

> *“Chopin´s achievement was to refine and give new substance to the conventions of popular pianism, enriching those conventions by drawing upon elements from other – and weightier – musical worlds. In this way he achieved a unique synthesis of the public and private, the popular and private, the popular and the significant. When it came to extended forms that meant a synthesis of the formal methods of popular concert music – above all the alternation of bravura figuration and melodic paragraphs based on popular genres – and the sonata based designs and organic tonal structures of the Austro-German tradition. The first Scherzo and the first Ballade were the earliest fruits of that synthesis”.* (Björling 2002; p. 14)

But in addition to these materials, Polansky also is compelled to work with elements derived from the context of the narration. For example, Szpilman’s personal history, the epic of his survival, the context of the war, the Holocaust, and all this within the particular emotional situation of the encounter with Captain Hosenfeld.

In addition to all these musical, historical and narrative materials Polansky has a complete range of materials belonging to the transposition’s cinematographic support: cinematographic time, lighting, sound, montage. These are only some of the elements in play for a cinematographic creation.

In addition to all of this, a series of social and cultural considerations of the current moment of cinematographic production also functions as material. In particular, the aesthetic and socio-political reception conditions at the moment of the film’s realization are undoubtedly also materials on which the filmmaker works. For example, the film’s reception would have been different if Hollywood had not produced Steven Spielberg’s *Schindler's List* earlier. Probably, Polansky worked with that – even unconsciously – when making his film.

Surely many more materials were dealt with. Many of them linked to Polansky’s personal concerns: his own history, feeling, ideology, etc. By all accounts, the way in which all these materials take part in carrying out the art work is so complex that any attempt to describe it exhaustively is chimerical by definition.

Nevertheless, it is possible to appreciate a few clear manifestations of the idea of a *dialectic of the materials* in this scene. For example, during the scene only a short fragment of Chopin’s complete composition is heard. This fact implies a choice, a decision made before the musical material. Thus, it goes from measure 40 to measure 45, and soon, from the first beat of measure 49 directly to the second beat of measure 209. It is possible to see here how two of the materials – the musical structure of Chopin’s Ballade and the cinematographic time – are operating dialectically at this point. The duration of Chopin’s complete score went against the very essence of the film’s cinematographic time. The logic of this dialectic achieves that nobody is surprised when the said *jump* occurs. This use of Chopin’s composition is *believable* in this context, there is therefore no need to criticize it, nor does it feel strange. What Polansky did is perfectly comprehensible (and highly artistic) from the point of view of the materials he had at his disposal. In this case, not only the structural characteristics but also many other narrative components allow him to perform this *musical montage* without jeopardising the sense of unity. When speaking of narrative in the Ballade, the passage that begins at measure 36 was mentioned as *narratively* leading the established order towards its dissolution. This passage accelerates the movements, and precipitates the character towards the *apotheotic* area (see chapter 10).

In short, this passage clearly manifests the way in which the artist built the scene using the materials *dialectically*.

The scenes that precede the one analysed here also show this dialectic. For example, from the moment the character of Szpilman leaves his hiding place (being destroyed by the German army) until he meets Hosenfeld, a very extended action sequence takes place in which only “the sound of war” is heard (bombs, shots, fire, breakages, marching soldiers and speaking or shouting voices without recognizable words). In that sound context, only three moments are extremely contrasting. In the first, the pianist imagines playing the piano (a passage from the Ballade in G minor) while showing a street of the city that was the scene of happier moments, introducing the identification of the musical piece with “Polishness, things familiar, that which is one’s own.” In the second, the pianist goes out for the first time to the totally devastated city while an old folk melody is played by a clarinet. Here the devastated context deepens the music’s folkloric feeling. In the third, the pianist hides in the attic of the house and listens to a piano. It is Beethoven’s Sonata number 14, *a quasi fantasy* in C# minor. Without seeing him, we already know this *other* pianist is German.

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Table of Multi–media contents (sound and video)

Example 1. Two performances of Meditación 6 by Sebastián Escofet ([1] from CD Meditaciones. Buenos Aires: Asterico Records 001; [2] from the 12-10-2001, live concert. Buenos Aires (personal communication))

Example 2. Two performances of Prelude in C major op 28 N° 1 by Chopin ([1] by Andrea Lucchesini (1988); [2] by Maurizio Pollini (1975))

Example 3. Two performances of Gracias a la vida by Violeta Parra ([1] by Mercedes Sosa (1971); [2] by Joan Baez (1974))

Example 4. Two performances of Los cuatro muleros Traditional Spanish ([1] by Encarnación López and Federico García Lorca (1931); [2] by Enrique Montoya (1960))

Example 5. Three performances of Prelude Op. 28 N° 24 by Chopin ([1] by Andrea Lucchesini (1988); [2] by Maurizio Pollini (1975); [3] by Enrique Villegas, Jorge López Ruiz and Eduardo Casalla (1967)).

Example 6. Martha Argerich’s performance (1977) (Chopin prelude in B minor)

Example 7. Vladimir Azkenazy’s performance (1979) (Chopin prelude in B minor)

Example 8. Alfred Cortot’s performance (1934) (Chopin prelude in B minor)

Example 9. Alfred Cortot’s performance (1945). (Chopin prelude in B minor)

Example 10. Alfred Cortot’s performance (1954) (Chopin prelude in B minor)

Example 11. Vladimir Horowitz’s performance (1964) (Chopin prelude in B minor)

Example 12. Maria Joao Pires’s performance (1994) (Chopin prelude in B minor)

Example 13. Cyprien Katzaris’s performance (1993) (Chopin prelude in B minor)

Example 14. Andrea Luccessini’s performance (1988) (Chopin prelude in B minor)

Example 15. Maurizio Pollini’s performance (1975) (Chopin prelude in B minor)

Example 16. Chopin’s Prelude in A major op 28 N° 7 (performed by Maurizio Pollini, 1975)

Example 17. Complete stimulus: Non prolongational EAS with coinciding OAS (Direct condition)

Example 18. Complete stimulus: Non prolongational EAS with non - coinciding OAS (intersecting condition)

Example 19. Complete stimulus: Prolongational EAS with coinciding OAS (direct condition)

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Example 30. Comparison stimulus. Fragment of Alfred Cortot’s performance (1933) (Chopin Ballade in G minor)

Example 31. Comparison stimulus. Fragment of Vladimir Horowitz’s performance (1968) (Chopin Ballade in G minor)

Example 32. Comparison stimulus. Fragment of Evgeny Kissin’s performance (1999) (Chopin Ballade in G minor)

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